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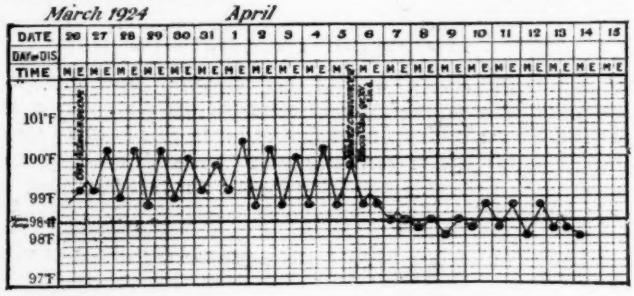

Patient: Boy aged 13 years. *Disease:* Septic bronchial catarrh following measles. *Sputum:* 15½ oz. per diem on admission; ½ oz. per diem on discharge. *(Chart kindly supplied by a London Physician.)*

(See also B.M.J., June 7th, 1924.)

Pharmaceutical Department,
68½, UPPER THAMES STREET, LONDON, E.C.4.

Presidential Address
ON
PSYCHIATRY AND MEDICINE.

DELIVERED BEFORE
THE SOUTHERN BRANCH OF THE BRITISH MEDICAL ASSOCIATION
BY
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IT is the purpose of this address to draw attention to the isolation of psychiatry from general medicine, to point out its causes, and to make some suggestions as to how it may be remedied. Psychiatry might be described as occupying a position in relation to medicine as a whole analogous to that of a certified patient to the life of the community. It is on the outskirts of medicine and points of contact are few and far between, and it is this regrettable isolation which is no doubt responsible for the fact that psychiatry has failed to keep pace with progress to the same extent as other branches of medicine. The chief cause of this state of affairs is not far to seek; it is the result of the lunacy law, which, however useful it may be as an instrument of detention, is entirely out of harmony with modern psychiatric thought. In the first place, then, we must devote some attention to a consideration of the law and point out in what respects it requires amendment.

SOCIAL ASPECTS OF THE LUNACY LAWS.

Speaking generally, mental disorders are the only diseases in regard to which the English law lays down formalities which have to be complied with before a patient can obtain admission to a hospital or nursing home for treatment. There is no legal objection to treating a patient at home even if he be certifiable, but such a patient cannot, without infringement of the law, be received for payment into a public mental hospital, nursing home, general hospital, or private house until he has been certified, and, with the exception of urgency orders which are only valid for seven days, until a justice's order has been obtained for his reception and detention. In the case of a poorer person either removal to a Poor Law institution is necessary, or certification on the application of the relieving officer as a "pauper" patient.

There are, of course, no legal restrictions to the treatment of mental cases which are not certifiable, though the existing facilities for so doing are far from adequate; but where such cases are certifiable the formalities of the law have to be complied with before they can be treated away from home. Now as a result of these restrictions there is naturally great reluctance to admit any case, whether certifiable or not, to which the term "mental" can be applied, to a nursing home; and it must be admitted that the apprehension which is felt is thoroughly justified, as an apparently uncertifiable patient may at any time assume severe psychotic symptoms which render his continued detention illegal. Confronted with the difficulty of removing a patient to a nursing home, the practitioner has to consider the possibilities of treatment at home. In some cases this is impossible, and in the majority it is undesirable for both the patient and his relatives. It is a difficult matter to adjust to the whims, oddities, fancies, and unpredictable behaviour of the mentally disordered patient, and one invariably finds that the presence of such a person produces a state of tension, fatigue, and anxious expectation amongst the other members of the family. In any case, the nursing of a mental patient in a private house is a matter of considerable difficulty, and unless a nurse has had experience in mental work she is scarcely fitted to undertake this type of sick-nursing. In view of the large number of mental patients in need of nursing and treatment it is much to be hoped that more nurses will endeavour to obtain a double qualification.

In a number of cases, therefore, the question of certification and removal to a mental hospital has to be considered. Such a proposal usually causes the greatest consternation and distress, and often meets with the opposition of the whole family. In many cases the practitioner hesitates even to use the term "mental" and employs the more palatable but incorrect one "nerves," because he knows that any suggestion that the mind is disordered is liable to provoke an attitude of resentment and disbelief, due, of course, to the excessive dread of insanity, asylums, and certification. The extreme degree of psychic blindness exhibited by the relatives of a person suffering from mental illness is almost unbelievable, and there is probably greater resistance to facing the realities of the situation in mental disease than that manifested in any other malady. Irrational as such an attitude may be, it is one with which we can fully sympathize. Though we, as psychiatrists, who live our lives in an atmosphere of psychic abnormality, regard our patients as naturally as if they were the subjects of physical disorder, society as a whole does not so regard them, but submits not only them, but their families as well, to an insidious social censorship. One cannot deny that it is a definite social disadvantage to have or have had a parent who has been certified, and I have frequently observed disastrous effects resulting from the feeling of biological inferiority—often unjustified—which this situation creates. For this reason the incidence of insanity in the family is concealed more closely than any other "skeleton in the cupboard," and it is quite understandable that families should be anxious to avoid certification, since it imposes the official stamp of lunacy upon one of its members, and, indirectly, upon the whole family group. We are thus faced with the curious fact that the hospitals provided by the community for the treatment of mental disorders are the very last places to which it is considered desirable to send patients suffering from these illnesses. The asylum is regarded as a last resort, and treatment therein is delayed as long as possible.

Now it does not follow that, because there are sentimental objections to certification on the part of the public, this procedure is not beneficial and necessary both for the protection of the community and for ensuring the adequate care of those who are unable to care for themselves. There will, of course, always be a number of persons who, from unsoundness of mind, need care, control, and treatment, and it is obvious that no person should be deprived of his liberty against his will other than by a legal process. The lunacy laws were designed to prevent illegal detention, to ensure humane treatment, and to obviate the possibility of misusage of the person and estate of the mentally unsound, and since their inception I think we may say that these aims have been in a large measure realized. While, then, we recognize the past and present value of the lunacy laws, there is no doubt that they have become a barrier to the effective treatment of mental disorder in its most curable stages, and I have not yet met a practitioner who did not consider that provision should be made for the observation and treatment of mental patients without certification, and that the law should be amended to make this possible.

It must be remembered that the lunacy laws were formulated at a time when not only the insane, but delinquents and paupers as well, were treated with great harshness, and when, so far as the insane were concerned, treatment as now understood was practically unknown. The conditions which made such stringent laws necessary no longer, of course, exist. The existing law portrays almost entirely the legal attitude of mind to the insane, and the certified person is not regarded in the eyes of the law as a patient in the true sense of the word. The mental patient is "put away" not primarily for the purposes of treatment, but because he cannot be "managed" in any other way. In effect, the attitude taken by the law to the subject of a psychosis is that he shall not be treated in a mental hospital unless circumstances force it, nor shall he remain if it is possible for him to be outside. What we obviously need is a change in the law which will encourage mental patients to obtain treatment when it is *medically* rather than *legally* necessary, and to remain under care as long as they need a hospital régime.

It is unnecessary to discuss in detail the changes in the law which are generally deemed to be so urgently needed. The subject is full of technical difficulties, but experience shows that the principle that all certifiable patients must

necessarily be certified to obtain hospital treatment is capable of considerable modification. Many cases at present certified could be treated on a voluntary basis, and those who are delirious and confused, and are thus incapable of volition, could often be safely dealt with by a simple procedure of notification similar to that which obtains in Scotland. The Board of Control, psychiatrists, and, I think I may say, the medical profession generally, are of the opinion that the care and treatment of the insane are hampered by unnecessary legal restrictions and that an amendment of the law is long overdue. I have no doubt the Royal Commission on Lunacy Administration will formulate proposals which will pave the way to reform in the existing methods of dealing with early and recoverable cases of mental disorder. At present we lack experience of the extent to which it is possible to treat the pychoses in open wards without certification, and for this reason legal innovations will naturally have to be based on a policy, not only progressive, but prudent as well.

Effects of Lunacy Laws on Psychiatry.

So far we have considered more particularly the social aspects of the lunacy laws, and we have aimed to show how early treatment is handicapped by legislation because families are reluctant to allow their relatives to be certified. It now remains to consider the effects of these laws on psychiatry as a branch of medicine, and I would first point out that if mental medicine is to progress it must cease to be the exclusive domain of the psychiatrist. What is most needed at the present time is full co-operation between psychiatrists and the medical profession as a whole. The former cannot be expected to solve unaided the manifold and complex problems of mental disease which are now recognized to include all those presented to the observer in general medicine. The factors entering into the causation of abnormal behaviour—the subject-matter of psychiatry—are extremely complex, and their elucidation requires the services of, not only the clinical psychiatrist, but the physician, the pathologist, specialists in all branches of medicine, biologists, educationists, and psychologists—a truly formidable list.

It is necessary to grasp the notion that a person's behaviour—that is to say, his reaction to his environment—cannot be directly correlated with any cause. Our actions at any given moment are determined by a myriad of past happenings, both individual and racial, the external situation at the time of its performance, and the present physical state of the organism. Any attempt to explain our actions by isolated causes is deceiving, and the failure to recognize this in the sphere of psycho-pathology creates much misunderstanding and hampers progress. Thus disputes as to whether insanity is due to inherent or acquired causes leads nowhere, as the influence of these factors cannot be estimated quantitatively. We cannot say how much of a person's behaviour is "due" to heredity and how much to environment, and the extent to which emphasis is laid on one or the other of these influences is largely dependent upon the observer's own psychology; that is to say, he will bring into the foreground the causal factors in which he is personally most interested. It is obvious that neither factor can be eliminated, and both have to be considered in any attempt to prevent the incidence of mental disorder.

It would be wrong to ignore the fact that predisposition plays a part in the production of abnormal mental states. There has been a tendency, however, to overemphasize this factor. It is now generally recognized that the causes of disease included under the term "predisposition" are represented by negative factors rather than active causative agents. Predisposition is indicated by the fact that one individual, having either inherited or acquired a greater deficit in a given potential, will require less of an exciting factor to interfere with normal function or give rise to a condition of abnormal function (A. C. Buckley). It must be recognized, however, that whether or not a child possess an inborn "sensitivity" the association from birth with psychopathic parents is often responsible for the development of an abnormal reaction to life. As Kempf points out, an unhappy parent, conventional and miserable because of his affective repressions, tends insidiously to make those about him cause repressions of all affective interests that tend to arouse the intolerable, repressed wish in himself. In this manner such adults incessantly influence the defenceless child to make repressions of the very affective functions whose freedom of expression is absolutely essential to the development of a healthy personality. Kempf presents a series of families to show how the abnormal affective adjustments in a parent influence a son with excellent functional capacities, and the son in turn influences the grandson. These relations are cultivated through innumerable experiences, day by day, extending throughout the growth of the child. Janet also has called attention to the fact that the presence of a neuropathic individual in a family almost invariably results in nervous reactions on the part of the whole household. He shows, moreover, that the explanation of these cases on the lines of heredity is often inadmissible, in so far as there is often no blood relationship between the affected individuals. It is thus clearly impossible to state with assurance the extent to which inherent predisposition and subtle and intangible environmental influences are respectively responsible for abnormal mental reactions, even when there is a definite family history of insanity or neurosis. The question has important practical bearings, for when the practitioner meets with a young patient in whom some inherent "sensitivity" is to be suspected, he may often do much good by recommending removal to school if there is reason to suppose that a psychopathic parent is exerting an unfavourable influence.

I have devoted some attention to hereditary influences because of the popular belief that insanity is necessarily the expression of degeneracy in the family. It must be pointed out that many psychoses occur, however, in persons in whom no family history of insanity or other forms of psychic inferiority is discoverable; these are the *accidental* psychoses—that is to say, those which are cured without leaving any morbid traces, and which constitute only an episode, more or less brief, in the life of man. In actually treating a given case I need hardly say that the existence or otherwise of a morbid predisposition is a matter of purely academic interest, as it obviously will tend to operate after recovery as a causal factor in further attacks. The exciting causes of a psychosis are numerous, and may be classified under the headings of psychic, toxic, exhaustive, organic, and traumatic. It is these physical factors which afford indications for treatment of the recent and acute psychoses. I wish to emphasize particularly the fact that the effective methods of treatment in these conditions are those which originate from general pathology—namely, those which aim to combat the processes of infection, auto-intoxication, and inanition. I am fully alive to the interest and importance of psychological studies of the insane, but developed psychoses are seldom amenable to direct psychotherapeutic approach, and successful treatment must be based on the principle that the symptoms observed are the expression of a morbid state of the physical organism. A knowledge of general pathology, of pathological anatomy, and of internal medicine are to-day indispensable for the efficient treatment of mental disorder. In spite of a personal interest in psychological problems I am of the opinion that the problems of psychiatry will only be solved by approaching them from the standpoints of biology and pathology, and I have no doubt that this branch of medicine will tend to develop more and more in those directions.

How Progress will Come About.

In the light of these observations it is clear that psychiatry can only advance by complete co-operation with general medicine. In order that this may be effected the existing mental hospitals obviously need, besides the full-time medical officers, a consulting staff drawn from the local hospital whose advice can be obtained when necessary. It is essential, for instance, that a psychiatrist, whose experience of obstetrics and gynaecology must necessarily be slight, should have the opportunity of consulting with a specialist in this subject in, at the very least, every case of puerperal insanity admitted to the institution. During the war I was in charge of a section for mental cases in a hospital admitting every type of illness occurring amongst

the soldiers. The staff naturally consisted of specialists in every branch of medicine, and I then discovered how advantageous it was to my mental patients to refer them to other members of the medical unit for advice in regard to any physical disabilities from which they suffered. My own knowledge was enriched, and the patient benefited by the consultations. Such a privilege should be made available in every mental hospital, and already is in many of them.

The complete union of psychiatry and general medicine can only be effected when the existing lunacy laws are so amended as to make it possible to treat the psychoses without legal formalities apart from institutions devoted exclusively to these disorders. The exclusion of mental cases from the great teaching hospitals which have special wards for every other type of illness is largely responsible for the divorce between psychiatry and medicine. That it is quite possible to treat many forms of psychosis in a hospital ward was demonstrated in an article in the BRITISH MEDICAL JOURNAL by Dr. Comrie.[1] Under present conditions of treatment the term "insanity" has come to carry with it the suggestion of chronicity, detention, legal pitfalls, huge institutions filled with incurable patients, degeneracy, and forms of illness for which "nothing can be done." At the outset of a student's career an impression of this kind must inevitably be created in his mind from the fact that he learns nothing of the psychoses, apart from his few visits to the asylum, where the majority of cases produced for demonstration are of the chronic and incurable type; and in his subsequent career, whether as specialist or general practitioner, he takes no part in the treatment of the psychoses which reach any degree of intensity. An entirely fresh point of view would be gained if in his daily work he came into contact with cases of mental disorder. He would learn, above all things, that many morbid mental states are due to the same pathological conditions as are the symptoms of the various systemic diseases, and amenable to the same methods of treatment. In the out-patient department, moreover, he would see a type of case which he will be called upon to deal with daily in his consulting room, and gain some knowledge of the treatment of the psychoneuroses—conditions which will bulk largely in his practice.

Similarly, in every urban area provision should be made for the treatment of the psychoses in their acute and early stages, and it is much to be hoped that this will be divorced entirely from the Poor Law. There is no possible reason why mental disorder should be tainted with pauperism as it is at present. The municipal health authorities which now deal with fevers and tuberculosis should obviously be entirely responsible for the care of the mentally sick who require in-patient treatment. With a suitable alteration of the law it should be possible also to treat certain certifiable cases by a simple system of notification in nursing homes. These more enlightened methods would naturally fit in with the doctor's experience as a student, and make it much easier to deal with mental cases to the satisfaction of the relatives.

I have aimed to show that if psychiatry is to progress it can no longer remain an isolated specialty; the solution of its problems requires the full co-operation of workers in every sphere of medicine, and this must naturally include those who are concerned in the prevention rather than the cure of disease. Mental hygiene cannot be dissociated from physical or general hygiene. A French psychiatrist has expressed the view that the causation of mental affections is dominated by three great social scourges: tuberculosis, alcoholism, and syphilis. These, he feels, are the chief infections whose influence is felt in the production of mental disorder, not only in its subjects but in the descendants. Certainly it is to-day firmly established that we profit, both mentally and physically, from the good health of our ancestors, and it is also equally true that we are the victims of their maladies, and more especially their chronic infections. The endeavours of our medical officers of health to stamp out syphilis would, if successful, considerably diminish the incidence of admissions to our asylums and would probably diminish the occurrence of mental weakness in the coming generations. Here, also, educationists and religious teachers have a serious responsibility, and there should be no hesitation in teaching young people the elementary facts of sexual hygiene. The subject of prevention is, of course, inexhaustible, and I can do no more than mention the fact that the present and future mental health of the community is closely connected with everything concerning the general standard of physical health and the conditions under which the people live.

It will be a long time before the prejudices which surround the subject of mental disorder are dissipated. We look forward to the time, however, when the public learn to regard this disease as naturally as any other, and when they learn that it is produced by causes similar to those which are responsible for physical maladies. If medical practitioners were consulted by their patients when the first symptoms of mental disorder appeared, I am sure that ordinary physical remedies, rest, and psycho-therapeutic conversations which would enable patients to unburden their minds, would arrest many cases which now drift into serious states before advice is taken. It is much to be hoped, moreover, that when hospital care is considered necessary mental patients will be as willing as the subjects of physical illness to undergo in-patient treatment without apprehension and a sense of social disgrace, whether it be in the wards of a general hospital, special clinics for the treatment of uncertified cases, or separate pavilions connected with urban mental hospitals. The future of the nation is ultimately dependent upon a healthy and vigorous mental reaction on the part of its citizens, and for this reason no effort should be spared to raise the general standard of mental health.

[1] BRITISH MEDICAL JOURNAL, September 27th, 1924, p. 551.

THROMBO-ANGIITIS OBLITERANS.

BY

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(With Special Plate.)

FIRST recognized in 1879 by v. Winiwarter and described by him as endarteritis obliterans, this disease has, during recent years, been more fully described by Buerger[1] of New York, who has given it the name of thrombo-angiitis obliterans. This name is the more accurate, because the disease is prone to involve veins as well as arteries.

The condition appears to have received little attention in this country. It can, however, hardly be rare, since no fewer than four cases have occurred in the practice of one of us within the last twelve months. It is with the object of drawing more widespread attention to this very grave disease that the following four cases are reported in considerable detail, together with the histological findings in the three cases which came to amputation on account of gangrene.

A study of Buerger's cases shows that the broad clinical features of the disease are as follows: It is a disease of the larger blood vessels which, although of unknown origin, shows the histological features of an inflammatory lesion. The vessels mainly affected are the larger arteries of the limbs, but the disease is seen also to some extent in the veins. Thrombosis occurs and is followed by organization of the clot. This produces grave embarrassment of the circulation, alleviated to a variable extent by the usual canalization of the fibrous tissue.

The disease occurs almost exclusively in males (99 per cent. in Buerger's cases), and the onset is commonly in the third decade. The lower limbs are affected much more commonly than the upper: it is the rule for the disease to begin in one lower extremity and to appear in the opposite limb at a date which may be from one to four years later than the first onset.

The disease produces symptoms such as would be expected in a limb in which the arterial circulation is being carried on only with the utmost difficulty. The first symptom to attract attention is pain, produced and increased by

exertion, and situated usually in the foot or calf. At this stage the absence of pulse in the dorsalis pedis, posterior tibial, popliteal, or even femoral artery will be noted. Later in the case a peculiar rubor, oedema, and trophic lesions are likely to develop, and in the more severe forms gross gangrene calling for amputation.

The duration of the disease is very variable—gangrene may occur early or may be warded off for as long as twelve years. No less than 52 per cent. of Buerger's cases came to amputation on account of gangrene.

The cause of the disease is unknown; there is no evidence that syphilis has anything to do with it. Buerger's patients were almost without exception Jews, and the disease has in fact been called "Die Hebraische Krankheit." This, however, can be no more than a topographical accident; each of our four cases was British born.

SYMPTOMS AND HISTOLOGICAL APPEARANCES.

Our first case was B., a male aged 40 years, clerk, British, seen December 17th, 1923; he gave the following history. When 30 years of age he noticed pain in the right calf; this pain came on after walking a short distance and passed off quickly with rest. Within four months he noticed similar pain in the left calf, and in a further six months the pain in both legs was severe and crippling. In this state he continued, with but slight aggravation, for a further two years. At the end of this time he could walk only short distances with the help of crutches. He next found that the right leg was slightly swollen and there was "purple discoloration of the toes." He began with massage and carried it on for five years; during this time he had a trophic sore on the front of the ankle, which took eighteen months to heal. The left leg continued to give pain, but got no worse. Two years ago, however, the left leg began rapidly to get worse and the pain was continuous in the calf, foot, and ankle. The foot was "always stone cold," and a small septic focus appeared on the inner side of the great toe.

Except for digestive trouble suggestive of duodenal ulcer, his previous medical history was good and the Wassermann reaction was negative. He had in his earlier days been a most enthusiastic fisherman, and had spent much time in wading, a habit to which he firmly attributes his present troubles.

Present Condition.—Right lower extremity: The whole limb is much wasted from disuse, its muscular power is good and sensation everywhere normal. The femoral pulse is normal, but the popliteal is barely to be felt, and there is no pulse below this level. Left lower extremity: Slightly wasted, but muscular power good and sensation normal. The whole foot is dull red in colour; there is solid oedema about the dorsum of the foot and a small onychia of the great toe. There is no pulsation in the common femoral artery or at any point below this. He insists that it is most comfortable when cool and dependent, and says that he gets a little sleep by hanging this leg naked over the side of the bed.

In January, 1924, this patient was seen during the night with severe abdominal pain, and was found to be suffering from a perforative lesion, presumably of the duodenum, as he had for some time past shown symptoms suggestive of duodenal ulcer. Laparotomy was done and a large perforation of the anterior wall of the first stage of the duodenum was sutured; the operation was completed by posterior gastro-enterostomy. As far as his condition allowed, an exploration was made to ascertain the condition of the intra-abdominal vessels. It was then evident that no pulsation could be felt in the common, internal, or external iliac arteries of the left side; these vessels were plainly to be felt as immobile cords.

He made an excellent recovery from the operation, but in April, 1924, ten and a half years from the onset of the disease, the whole of the left foot became rapidly gangrenous, the condition having spread from the old onychia of the great toe. A supracondylar amputation was done through the left thigh on the following day; the femoral artery at the level of the section was open and normal. The wound healed without incident.

Histological Examination.

On dissecting the amputated limb, isolation of the large blood vessels was found to be difficult on account of dense perivascular adhesions, which were particularly strong in the popliteal space. Although the femoral artery was patent, almost the whole length of the popliteal artery was occluded. Sections of this vessel showed the lumen to be filled with loosely arranged fibrous tissue (Fig. 1) containing a number of minute channels, all of which possessed an endothelial lining and some a thin muscular tunic (Fig. 2). The intima was a little thickened and slight fragmentation and fibrillation of the internal elastic lamina was seen. The amount of muscular tissue in the media was much reduced and the fibres separated by fibrous tissue (Fig. 3). The adventitia was markedly increased in thickness, and contraction of this had caused considerable reduction in the diameter of the vessel. The popliteal vein exhibited some irregular thickening of the intima (Fig. 5) and part of the lumen was occupied by a recent thrombus. Fibrous tissue was present in considerable amount between the muscle fibres of the media and the outer coat was greatly thickened. The changes found in the posterior tibial artery were almost identical with those described in the case of the popliteal, but less thickening of the intima was discovered in the anterior tibial vessels and the dorsalis pedis artery was normal. A section of the lower part of the internal saphenous vein manifested changes similar to those found in the popliteal artery.

This case is very typical, running a course of eleven years so far with very slowly progressive deterioration. It is noteworthy that it was possible during life to verify the total thrombosis of the common, internal, and external iliac arteries, and the history illustrates a point which has been evident in other recorded cases—that is, the limb which is to be affected later tends ultimately to become the worse.

CASE II.

S., male, aged 52 years, electrician, British, seen February 17th, 1924. This man had never had a day's illness in his life until the beginning of the present trouble. He had latterly complained for one year of pain in the right calf. This pain came on after the slightest exertion and was immediately cured by rest. The patient had thought it to be rheumatism and had not sought any advice. One week before he was seen by us a small black patch had appeared on the inner side of the great toe and a second similar patch developed over the heel. Within a few days the whole foot and ankle were in a state of gangrene.

His general condition was very grave owing to toxaemia and exhaustion from pain, but examination disclosed no evidence of the more usual causes of gangrene. His heart, though rapid, was otherwise normal; he showed no sign of arterial sclerosis and his urine contained neither albumin nor sugar. The Wassermann reaction was negative.

A supracondylar amputation of the right thigh was done at once, and he made an excellent recovery.

In this case complete occlusion of the lower part of the popliteal artery for a distance of about three-quarters of an inch was found, and sections at this level revealed changes similar to those recorded in the first case, except for the greater density of the tissue occupying the lumen. Strong adhesions fixed the popliteal vessels, which were excised with difficulty, to the surrounding tissues. Only early manifestations of the disease were found in the anterior and posterior tibial arteries, there being a cellular infiltration of the walls and a little fibrosis without any thrombosis. The internal saphenous vein showed advanced fibrosis of the media and adventitia, but only early evidence of organization of the thrombus in the lumen.

This case, although occurring in an older man, appears also to be an example of thrombo-angiitis obliterans. On the results of the clinical examination of the patient and on the histology of the vessels, no other cause appears at all possible.

CASE III.

V. S., male, aged 37 years, clerk, British, seen September, 1924, gave the following history: He had always been a very vigorous and robust man until three years ago, when he noticed a sudden pain in the left calf on walking. He was able to walk about two hundred yards and was then obliged to rest. This condition was the only feature during one year; at the end of that time an exactly similar pain came in the right calf. This pain, which spread to the foot and produced "burning of the toes," gradually became very severe. It came also when he was at rest and began to destroy his sleep. It has continued to be present in a wellnigh intolerable severity, and its progress has been in no way altered by the most varied and extraordinary treatments before we saw him.

Examination of the left lower extremity shows that there is no pulse in the common femoral artery and no pulse at any point below this. The superficial femoral artery is felt in the lower angle

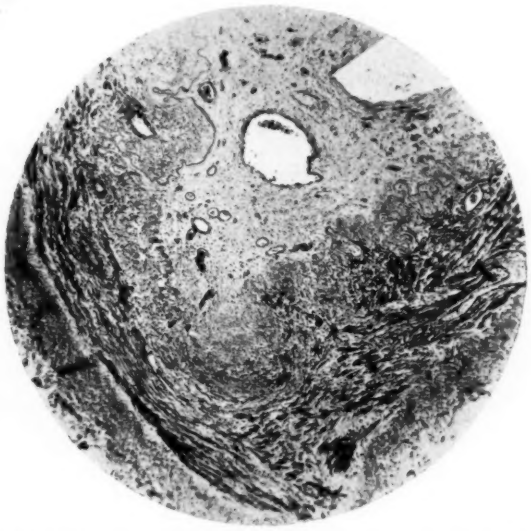

FIG. 1.—Section of popliteal artery in Case I. The character of the occluding tissue, the thickening of intima, and the fibrosis of the media are well seen.

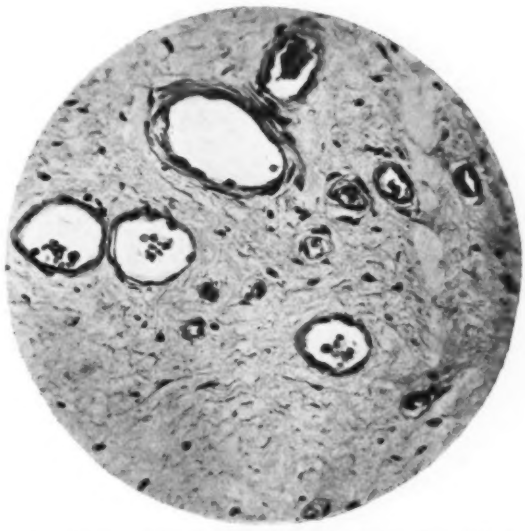

FIG. 2.—High power view of the occluding tissue in popliteal artery in Case I. A number of channels lined by endothelium, and a few possessing a scanty muscular tunic, are seen.

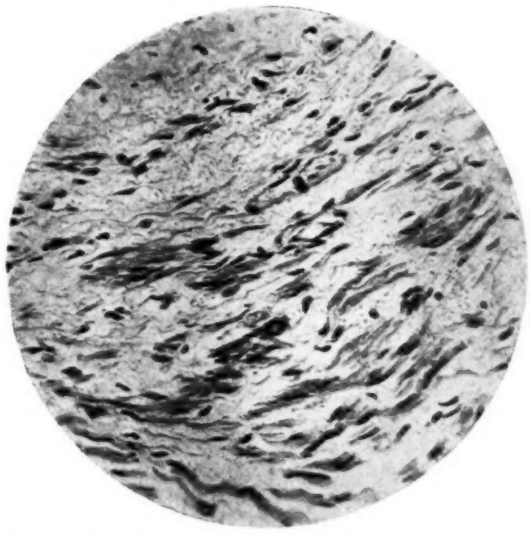

FIG. 3.—Section of tunica media of popliteal artery in Case I. The marked fibrosis with separation of muscle fibres is shown.

FIG. 4.—Section of tissue occluding lumen of the popliteal artery in Case IV. A collection of lymphocytes occupies the centre of the field.

FIG. 5.—Section of the wall of the internal saphenous vein in Case I, showing cellular infiltration of the tunica media.

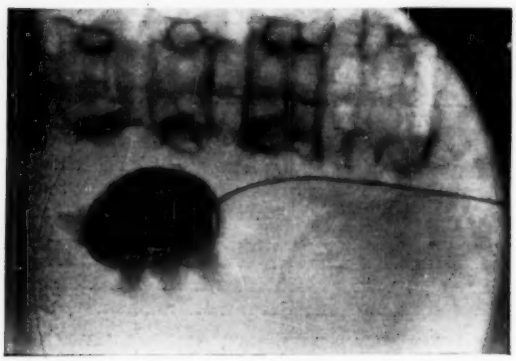

FIG. 4.

FIG. 8.

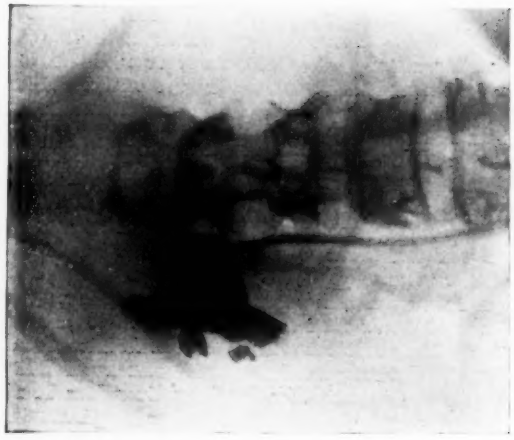

FIG. 3.

FIG. 7.

FIG. 2.

FIG. 6.

FIG. 1.

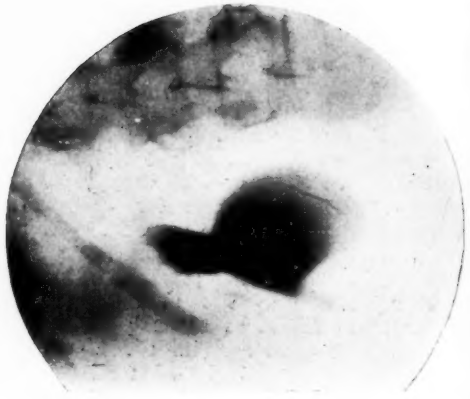

FIG. 5.

of Scarpa's triangle as a stiff cord. The whole circulation of this limb is at a low ebb, the cutaneous return is slow and the limb blanches much on elevation. There are no trophic changes, muscular power and sensation are normal, but it is noted that the deep reflexes are somewhat increased.

The right lower extremity, which is the chief site of pain, shows a pulse in the common and superficial arteries, but no popliteal pulse is to be felt, neither is there any pulsation in the leg or foot. The condition is in other respects exactly as on the left side. It is again interesting to note that the left leg, in which the disease first began, is at present much the better from the patient's point of view, although the loss of the pulse is the more extensive. The Wassermann reaction was negative.

This case is a very typical example of thrombo-angiitis obliterans. It has shown during three years a slow and steady aggravation. There are at present only pain and loss of pulse, but it is greatly to be feared that it may run a course to final gangrene.

CASE IV.

H., male, aged 45, clerk, British, seen September 28th, 1924. The disease began twelve months ago with pain in the great toe of the left foot, followed very shortly by sudden acute pains in the shin and knee-joint. After walking a short distance there was cramp in the left calf, together with a feeling "as if there was a tight band round the leg below the knee." These symptoms always passed off after a few moments' rest. He noted next that his foot was "stone cold" and could never be revived by any of the measures which he took to keep it warm.

Three months before he was seen a small "blood blister" appeared on the third toe by the side of the nail, and from this point there progressed an ever-increasing dry gangrene. The whole front half of the foot was black and mummified, but there was at the attempted line of demarcation a feeble inflammatory reaction with a little very foul discharge.

Examination of the leg showed that the femoral pulse was present and that a slight pulse could be felt at the apex of Scarpa's triangle. No pulse could be felt at any point in the leg below this. Sensation throughout the limb was normal, but muscular power was poor from disuse and there was flexion-contracture of the knee-joint. The right leg was quite normal.

The patient's general condition was poor owing to pain and toxaemia, but beyond very foul teeth he showed no other sign of disease. The urine was normal; his heart showed no lesion, and he had a blood pressure of 120 systolic and 80 diastolic. His previous medical history was excellent and the Wassermann reaction was negative.

A supracondylar amputation was performed, and it was noted that the main artery on the face of the stump was blocked by a brown, partially organized clot. There was an entire absence of haemorrhage and no ligature was employed. The stump healed without incident.

In this case there was complete occlusion of the whole popliteal artery, and microscopic sections revealed a similar picture to that seen in the first case, but in addition to the other features a group of lymphocytes was found in the tissue occupying the lumen (Fig. 4). This collection of lymphocytes had an appearance not unlike a tubercle, and such structures have been observed by Buerger, but he describes the cells as polynuclear leucocytes. Fibrous tissue had replaced much of the muscular tunic of the popliteal vein, but only a small thrombus, which was becoming organized, was found in the lumen. The posterior tibial artery and vein were also completely occluded except for the usual small channels in the organized thrombus. There was considerable fibrosis of the media and adventitia; this was found also in the anterior tibial artery, but the latter vessel was still patent. The changes seen in the anterior tibial vein consisted of cellular invasion of the media and adventitia only. The muscular tissue of the wall of the internal saphenous vein was largely replaced by fibrous tissue and a recent clot was to be seen in the lumen.

There can be little doubt that this case is an example of thrombo-angiitis obliterans. The disease began in a man 44 years of age, of good physique and with an excellent medical history. It ran a typical but somewhat rapid and disastrous course. It will be a matter of great interest to observe whether any similar changes occur in the right lower extremity, which is fortunately so far unaffected.

SUMMARY OF PATHOLOGICAL OBSERVATIONS.

The changes found in the three limbs examined after amputation correspond closely to those described by Buerger, and manifest the various stages of the disease. At the outset there appears to be a lymphocytic, not a polynuclear leucocytic, invasion of the coats of the arteries and veins. The cells are replaced by fibrous tissue and new vessels may be seen extending through the adventitia to the media. Whilst these changes are proceeding parts of the lumen become occupied by a clot, which is gradually organized. In the obliterating connective tissue a number of small channels are to be found which have a lining of endothelium, and, surrounding this, some possess a thin coat of smooth muscle. After the thrombosis has occurred and whilst organization is proceeding, collections of lymphocytes not unlike tubercles often make their appearance and persist until they are replaced by fibrous tissue. There is commonly some irregular thickening of the intima, but as a rule only very slight proliferation or fibrillation of the internal elastic lamina. At a later stage the fibrous tissue in the lumen has a denser appearance, but this may be due, at any rate partly, to the contraction of the newformed fibrous tissue in the media and adventitia, which not infrequently shows hyaline or other degenerative changes. This contraction may be an important factor in the production of gangrene, since it leads to compression and occlusion of many of the newly formed smaller channels in the connective tissue in the lumen.

The histological examination indicates that the disease is much more widespread than the clinical picture would suggest, both superficial and deep veins and arteries being involved, but all the vessels in one region are not equally affected. Case II illustrates this best, since late stages of the disease were seen in the popliteal artery and only early manifestations in the anterior and posterior tibial vessels. The constancy of advanced changes in the popliteal artery is significant, and may be due to the strain to which it is constantly subjected by movements of the knee-joint. On the other hand, the constancy of changes in the popliteal artery in amputated limbs may be misleading, since obstruction of this artery is most likely to result in gangrene. There is no evidence to suggest that the disease is secondary to any affection of peripheral nerves. The microscopic findings are those of a chronic inflammatory lesion, and suggest a microbic origin of the disease. Rabinowitz[2] claims to have isolated a Gram-negative, rod-shaped and beaded organism, and to have produced by the bacillus the same lesion in the ears and feet of rabbits as that which was present in the leg of a human being. These experiments require repetition, and further investigation is urgently required before the origin of the disease can be decided.

It is impossible to resist the conclusion that in this rare and very grave disease we have a definite clinical entity. Of its cause we know nothing. Cold, malnutrition, racial peculiarity, and even cigarette smoking, have been indicted, and there is the inevitable "toxic" theory. It is much to be regretted that no abortive or curative treatment is as yet available, and it is hardly to be expected where structures such as main arteries are already plugged and destroyed by scar tissue.

TREATMENT.

Treatment can at present be only such as is dictated by the perilous vitality of the limb—rest, massage, and, above all, protection from any form of injury. It is for this reason very essential that a correct diagnosis be made early in the history of these cases. Otherwise it is possible that harmful and even disastrous treatment may be applied. One of our cases sustained a trivial electrical burn which took no less than eighteen months to heal, and a second case was in danger of losing his limb in consequence of the advice given by his medical man to apply hot turpentine stupes.

Where gangrene eventually ensues we think it important that nothing less than a supracondylar amputation of the thigh be done. The popliteal bifurcation is wellnigh certain to be blocked, and to amputate at a lower level is to court disaster.

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REFRACTION WORK IN GENERAL PRACTICE.*

BY

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CORBRIDGE-ON-TYNE.

REFRACTION work in general practice is, or ought to be, just the same as refraction work in specialist practice—the same principles are involved and the work should be done in the same way. I do not propose, therefore, to trouble you with the principles of refraction or the details of treatment of the various forms of refractive error. These can be found in any handbook of refraction, of which there are many, one of the best being Mr. Percival's little book entitled *The Prescribing of Spectacles*.

What I do propose to give you are some hints on equipment and procedure which I hope may be of some use to those who, like myself, are interested in the subject and have to do their refraction work in the time they can spare from the work of a general practitioner.

It will, I think, be easiest to give you the points I wish to make if I follow the patient from the moment he comes into the consulting room till the final moment when he is allowed to wear the glasses that you have tested and found to be in accordance with your prescription.

The first thing to do on his arrival is to note his name and address, age, and the symptoms that have brought him to you. For this purpose nothing is more convenient than the card index system. My own cards are the ordinary 5 in. by 3 in., but if I were starting over again I should use a larger size. The next step, if the patient has worn glasses, is to examine them and note what they are, and also who prescribed them. You can estimate their strength by neutralizing them with lenses from your trial case, finding the axis of astigmatism, if any be present, by holding the glass between you and the window frame and turning it round till you can see through it both the middle sash and the vertical mid-bar undistorted. But a much quicker method is to use the Geneva lens measure. As an instance of its use I had a patient lately for whom I had prescribed a pair of +0.5 spheres for constant wear. I was surprised to find that they were causing trouble. The glasses were neutralized by −0.5 spheres and their optical centres were the correct distance apart. I found, however, by using the lens measure that while one was an ordinary biconvex or plano-convex lens, the other was concavo-convex or periscopic. The optician was requested to give the patient two lenses of the same kind, and the trouble disappeared.

One point is worth mentioning with regard to the lens measure, and that is that the revolving hand is apt to work round a little with constant use to one or other side. It is advisable, therefore, before testing a lens with it, to place it on a plane surface—for example, on one of the sides of a prism from your trial case. If the pointer stands at zero all is well. If not, you must make the necessary correction from your subsequent readings when you are testing the lens. Having found by the lens measure the strength of the glass it is as well to neutralize it by lenses of opposite sign and see if vertical and horizontal lines can then be seen through it without distortion. If not, the probability is that a prism has been combined with the other lenses, and its strength can be found in the same way by neutralizing.

Before returning the glasses to the patient you should see whether the optical and geometrical centres coincide—again by the use of the window frame, or any convenient horizontal and vertical lines—and in any case should measure and note the distance between the optical centres. A straight steel millimetre rule is convenient for this purpose.

The next thing to note is any abnormality in the general appearance of the patient's eyes—epiphora, conjunctivitis, slight reddening of the corneo-scleral margin, etc.; and also whether there is any nystagmus or obvious squint. The room is then darkened and the eyes examined by focal illumination. For this purpose, and also for the indirect method of using the ophthalmoscope, the unmounted lens that is sold with the ordinary Morton ophthalmoscope is not very convenient. It is better to have one a shade larger, of approximately the same strength (mine is + 13), mounted in a ring frame with a ring handle. This lens is easier to hold for all purposes, and in the indirect method when examining the patient's left disc you can hold the lens with your hand on his forehead in such a way that your forearm does not prevent his right eye from looking towards your left ear. With the small unmounted hand lens this is almost impossible, unless you hold it below, and if you do you have not the command over it that you have over the ringed lens.

Focal illumination will show, among other things, corneal opacities, abnormalities of the pupil such as the Argyll Robertson pupil of tabes, or general paralysis of the insane; the tremulous iris that indicates a dislocated or extracted lens; the dilated and feebly reacting or immobile pupil of glaucoma; the contracted pupil of iritis; irregularities in the shape and size of the pupils, and so on. The size of the cornea and the depth of the anterior chamber are also worth noting. We are apt to imagine that the size of the cornea is much the same in all eyes, but anyone who has done a few cataract extractions or has made any use of Schiotz's tonometer knows that there is considerable variation in the corneal diameter. The foot-piece of the Schiotz tonometer, which is placed on the anaesthetized cornea, measures 10½ mm. across. In some eyes there is very little corneal margin to be seen when the instrument is in position, while in others quite a wide band remains uncovered. The importance of this point in refraction work is that an eye with a small cornea has presumably less adequate provision for the escape of aqueous into Schlemm's canal than the eye with a large cornea; and when you are examining such an eye and note that the anterior chamber is also shallow you should resist all temptation to dilate the pupil. Even a mild mydriatic like cocaine might be sufficient to produce an attack of acute glaucoma in such an eye.

The final point to notice in this part of the examination is the condition of the lens, and here a word of warning may not be out of place. The concentration of light on the eye in focal illumination is apt to produce a white appearance in the depth of the lens, and the inexperienced observer may mistake this for an opacity. Twice within the last few months I have seen patients in whom cataract has been diagnosed as the result of this examination—a mistaken opinion that a moment's inspection with the ophthalmoscope was sufficient to refute.

The next step in the dark-room examination is the inspection of the eye with the plane mirror of the ophthalmoscope. In this way faint corneal nebulae that have escaped notice in the previous examination are easily detected. They are important to note, for their presence if central will make a great difference in the patient's visual acuity and will readily explain his failure to read 6/6 when he comes to the subjective tests. Cataract, if present and central, is at once spotted; while the failure of the red reaction in one position of the eye would lead one to suspect a detached retina, a dislocated lens, or an intraocular tumour.

Then comes the examination of the fundus of the eye with the concave mirror and the hand lens—the indirect method. The disc, periphery, and macula are examined rapidly in turn, the clearness or otherwise with which the fundus is seen giving one an idea of the condition of the vitreous. This finishes the preliminary examination. It takes a long time to describe, but in a normal eye takes only a couple of minutes or less to carry out. If any abnormality is detected it can be further investigated by the direct method. If none is seen it is at least worth while knowing that the eye is apparently normal.

The next step, if you have an astigmometer, is to use that. They are unfortunately expensive instruments, running from £20 to £40 or more; but they are undoubtedly most valuable, giving you in one or two minutes information that may take you ten or fifteen to acquire by retinoscopy—namely, (1) the amount of corneal astigmatism present, and (2) its axis. Retinoscopy is then proceeded with in the usual way, the patient being seated with his eyes as nearly as possible one metre distant

* Address delivered to the North of England Branch of the British Medical Association.

from your ophthalmoscope. The light may be either electric or incandescent gas, or even an oil lamp if nothing better is obtainable, but it must have a ground-glass globe, and it must be placed on a bracket which you can move both vertically and horizontally. It is adjusted to a position just behind the patient's head, either just above or close to one side; in either case it must be so obscured by his head that the light does not shine on the back of the lenses in the trial frames. The trial frame is then fitted and lenses inserted till the shadows are reversed. You can assure yourself that your correction is good by leaning slightly forward, and then somewhat back from your position of one metre distance, and noting how the shadows move in each position. If in one direction when you lean forward and the opposite when you lean back you may be satisfied that your lens is approximately correct.

One very important point is the direction in which the patient fixes his eyes. Theoretically he should look directly into the mirror, as it is the refraction in his visual axis that you want to find, and when his accommodation is paralysed by a cycloplegic he should do so towards the end of your examination when you have found his approximate correction. If his accommodation is not paralysed the pupil will contract too vigorously if he looks straight at the mirror for any satisfactory retinoscopy, but he should be told to look as close as possible to the top or side of your head. If you allow him to look a foot or two away you may get a beautifully illuminated pupil and much easier shadows to watch, but you may find when you come to the distance test that you are as much as two diopters out in your estimate.

The next step is to try the effect of the lenses you have found with the Snellen's types at 6 metres distance. It is convenient to have more than one set of types, as some patients, especially children of school age, very soon learn the letters off by heart, and when you come to their second eye may repeat them without really seeing them. The best form of type to get is printed on some material which is washable. Besides the test types you should have on your consulting room wall some form of astigmatic fan; and also Maddox's tangent scale.

In most consulting rooms there is a difficulty in getting the patient sufficiently far away from the types; 6 metres is approximately 20 feet, and few of us have consulting rooms of that length. The difficulty can sometimes be got over, if the room is fairly large, by placing the types in one corner and the patient in the opposite.

Another useful method in a small room is to place a mirror on the wall opposite the patient, while a special card of types, on which not the letters but their mirror images are printed, is hung above his head in such a position that the distance from his eye to the mirror, added to that from the mirror to the types, equals 6 metres. Another method is to make use of a passage leading into the room to give one the extra distance—the patient being seated in the passage and looking through the open door of the consulting room at the charts on its wall. Failing all these possibilities one can have a set of types in which the size of the letters is altered to correspond to the distance at which they are to be read.

The illumination of the test cards is an important point. If you use daylight your results from day to day in this climate are not comparable. A patient will read sometimes two or three more lines when bright sunlight is falling on the types than he will when the sun goes behind a cloud. The ideal thing is to use a dark room with a vertical series of lights, shaded from the patient, shining on the card in such a way that all the letters are equally illuminated. In any case it is advisable to use artificial light, as you can ensure your tests being always done under the same conditions.

The patient is now seated at 6 metres distance from the Snellen's types with a blank disc in the trial frame opposite his better eye. You test the worse eye first to prevent the patient getting too familiar with the letters in the lower rows. Opposite this eye you then insert any cylinder you may have found necessary by the ophthalmometer or the shadow test, and a spherical lens in hypermetropia which you know to be too strong and in myopia one which is too weak. The patient then reads as far as he can. You then proceed to add *minus* spheres until you reach a point where a further sphere, though he may say he sees better with it, does not enable him to read any further. You then see if alteration in the angle of the cylinder improves his vision. If not, the next step is to use a crossed cylinder. You can do this by taking the 0.25 *plus* and *minus* cylinders from your trial case, holding them together with their axes at right angles to one another, and placing them in front of the patient's eye with one of the axes in the same plane as the axis of the cylinder he is wearing. If this is no improvement you try it the other way round. If he is wearing a *plus* cylinder and you find that when the axis of the *plus* cylinder in your combination is parallel to its axis he sees better, then his cylinder is probably too weak; if he sees better with the *minus* cylinder parallel to the axis of his cylinder, then his cylinder is too strong. You make the necessary alteration in the cylinder, test again with the weak *plus* and *minus* spheres, and then again with the crossed cylinders, till you have found the combination that gives him the best vision.

The crossed cylinders are a little difficult to hold in position exactly at right angles to one another and also with the axis of one of them exactly parallel to the axis of the cylinder in the trial frame—especially if the latter is not vertical or horizontal; the glasses are also apt to get dimmed by the heat of your fingers as you hold them. It is much quicker and easier to use Jackson's crossed cylinders—single lenses with cylinders of opposite sign ground on either side at right angles to one another. You can get them in any strengths—0.25 and 0.50 are the most generally useful. When you buy them you will usually find the axes of the cylinders marked on the glass either by scratches or by coloured dots, and neither of the axes as a rule coincides with the handle. It is worth while slackening the screw in the ring mounting with a small screwdriver (which, by the way, is a most useful implement to have in your trial case), and twisting the lens round till, say, the axis of the *minus* cylinder coincides with your handle. If you know that this is so, it is easy and quick to hold the crossed cylinders in the correct position in front of the other lenses. The other eye is then similarly tested, and then the vision with both eyes wearing the correcting lenses is taken and you see whether the patient will accept any additional *plus* spheres when both eyes are open.

The next step is to test the patient's near point with each eye separately while wearing the correcting glasses. If you find the amplitude of accommodation markedly less than it should be at his age you may suspect a spasm of the ciliary muscle—not such a very uncommon condition, and one which it is important to diagnose and treat, as it is responsible for a good deal of suffering. I had a patient recently, sent by Dr. Fairclough of Hexham, a woman of 35, who had lost one eye in infancy. She had been fitted with a *minus* sphere and cylinder by someone who had not suspected this condition, and for years she had been in misery with symptoms of eye-strain. I tested her under homatropine, but, not being satisfied with the result, made her use atropine drops for several days and then retested her. I then found, as I had suspected, that there had been a spasm of the ciliary muscle, and she had compound hypermetropic, not myopic, astigmatism. Her new glasses gave her complete relief from eye-strain and great comfort in near work, and she is finding, as her ciliary muscle gradually relaxes, that the dimness which she at first felt when wearing the glasses for distance is disappearing.

Having tested the patient's near point, it is advisable to put a Maddox rod in front of the correcting lenses in the right eye and test for any latent defect of muscular balance. Of these the most important is hyperphoria, the test of its presence being that when the rods are vertical the patient sees the red horizontal line either above or below the light in the centre of the tangent scale. When this is found the prism necessary to correct it should be found and noted. The rods are then placed horizontally in the trial frame and the patient tested for esophoria and exophoria—the vertical red line in this case being either to the right or left of the centre light. Practice varies as to whether

these defects should be corrected or not. As some of them disappear when the patient has worn the glasses which correct his refractive errors for some time, I personally do not correct them to start with. But if a patient who has given his glasses a good trial—say six weeks or more—still complains of eye-strain, and especially if he is troubled with diplopia, I retest with the Maddox rods and consider the question of prescribing prisms.

If the patient is over 40 he should now be tested with the near types to see what addition, if any, is necessary for near work. It is very important to find out exactly at what distance the patient wants to see—a short man with short arms will probably hold his book about 10 inches from his eyes; patients of another build will prefer it 13 inches away or even more; while a pianist requires vision at about 20 inches, and a laundress ironing at a table may want even more. The near vision addition would, of course, be different in each of these cases.

The chief mistake to avoid is giving the patient too strong an addition for close work. If you test the patient with a strong light behind him shining on the near types he is very likely to take a stronger lens than he requires, and he will probably complain when he comes to try the glasses afterwards that he feels they are "tearing the eyes out of his head." As a rough working rule for the patient who reads at 13 inches, the usual distance, we add +0.5 at 45; +1.75 at 50; +2 at 55; and +2.25 at 60—he should never require any stronger addition than this to his distance glasses.

At the same time it should not be forgotten that a patient after 50 gradually develops an acquired hypermetropia, so that his distance glasses require gradual strengthening. A man who is emmetropic at 50 may require as much as +2.25 spheres for distance when he reaches the age of 80, and, of course, his near glasses will have to be correspondingly strengthened. The point I wish to emphasize is that the *addition* to his distance correction for reading at 13 inches should probably never be greater than 2.25 at any age, with the possible exception of myopic eyes, as in them the range of accommodation is usually defective.

The next step, and a very important one, is to measure the distance between the patient's eyes both for distance and for near vision. The patient should wear his correcting lenses during this test and should, of course, fix a distant object when he is wearing his distance glasses, and a near when he is wearing his near glasses.

The patient is now ready for his prescription. One of the snags in writing this is, that there is so much confusion in the way the angles of cylinders are marked. The standard method is to make the left side of each of the patient's eyes as you look at him zero, and measure the degrees from that counter-clockwise. But you will find trial frames and prescription forms marked in all sorts of ways—zero sometimes at the temporal, sometimes at the nasal side of each eye; sometimes at the temporal side of one and the nasal of the other. If you have not a prescription form with a diagram on which you can mark the angle it is always advisable, after writing the strength of your cylinders and the degrees of the angle, to draw a horizontal line and then draw a line from one end of this to show roughly in what direction the angle is to be measured.

Before the patient goes you should give instructions as to whether the glasses are to be worn constantly or not; you should warn the patient (unless you have prescribed periscopic lenses) that he must learn to turn his head when he wants to see anything to the side, so that he always looks through the centre of his glasses; hypermetropes and anisometropes should be warned that they may require some weeks of constant wear before the glasses become comfortable; patients who are given cylinders at an angle for the first time should be warned that at first they will be troubled by straight lines not in the direct line of vision appearing distorted; while all patients, but especially children, should be advised to take their spectacles to the optician from time to time to make sure that the frames have not got twisted.

The final point is to insist that the glasses should be sent to you to be checked before the patient wears them. I have learnt the necessity of this by repeated painful experience. I have had patients complaining that the glasses did not suit them in whom I have found the axes of the cylinders the opposite way to my prescription. I had a patient once for whom I took the trouble to work out a formula for periscopic lenses for use while playing tennis. It was only two years afterwards, when he came to see me about something else, that I found the glasses had been useless, and on examining them found the opticians had disregarded my formula and sent him ordinary spheres; I have had patients with anisometropia in whom the strong lens had been put opposite the eye that required the weaker. But the thing in which I find the greatest difficulty is in getting the lenses centred correctly. The oculist finds a frame that fits nicely on the patient's nose and looks neat, and he will often fit the lenses into this without any regard to the interpupillary distance. Glasses undoubtedly look neater when the lenses are not very wide apart, and there is no objection to the optician using such frames so long as he decentres the lenses outwards so that the distance between the optical centres is correct, but so far I have never seen this done. Almost always, unless specially ordered otherwise, the optician fits lenses of which the optical and geometrical centres coincide, though I have actually had a case in which the lenses were the correct distance apart, but for some obscure reason or other decentred lenses were fitted, bringing the optical centres much nearer than they should have been!

I lay stress upon this point because I believe a mistake in the centring of the lenses is often an unsuspected cause of eye-strain. This is not to be wondered at when you remember that a spherical lens whose optical centre is not opposite the centre of the pupil has the action of a prism. An error of only 4 mm. (1/6 inch) in the distance between the optical centres of a pair of +5 spectacles will have the same effect as putting a No. 1 prism before each eye. When weak lenses are concerned the prismatic effect of wrong centring, if only a few millimetres out, does not matter much; but when you have to prescribe strong lenses in either hypermetropia or myopia it is very important to satisfy yourself that the optical centres are exactly the right distance apart.

THE TREATMENT OF SEA-SICKNESS.

BY

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RECENTLY, in a brief but fairly exhaustive review of the various theories of the causation of sea-sickness, Ribolla[1] points out that overstimulation of the vestibular nerve, with consequent irritation of the vagus, best meets the case. As he shows, sea-sickness presents the syndrome that may be observed in sensitive subjects on excitation of the vestibular nerve by the simple injection of warm or cold water into the external auditory meatus, or by means of a mild voltaic current. Perhaps the most exhaustive account of the part played by the semicircular canals in motion-sickness is that of J. Byrne,[2] which is extremely valuable for reference. Sea-sickness is not an affection *sui generis*, but a particular form of motion sickness, other variations of which are the nauseas associated with aeroplanes, trains, swings, roundabouts, waltzing, etc.

The part played by the internal ear has been recognized for many years[3 4] and may now be regarded as fully accepted. Portier[5] recently gave a very good description, with diagrams, of the nervous mechanism involved. Pozerski at the Pasteur Institute, studying what Weiss[6] calls "ce petit accident des traversées," induced it experimentally in animals by means of an apparatus capable of producing rolling and pitching motions. Several interesting points emerged. Fasting animals were found less susceptible than recently fed ones; many kinds were quite immune, and others soon acquired immunity. As showing the psychological factor, a dog, after the first experiment, on being brought into the room was sick at the mere sight of the machine.

In addition to anticipation and dread, other factors such as optic vertigo—as pointed out by Erasmus Darwin,

Hewitt, and Wilson Fox—agitation of the abdominal viscera, etc., play subsidiary parts. Quite young infants and very old people are generally immune, as might be expected in a functional nervous condition, such as sea-sickness is. To explain the relative immunity of babies the state of the thymus and endocrine glands has been suggested.[7] This seems unnecessary. Further, Bédart and others affirm that deaf-mutes are not susceptible to motion-sickness. Sir T. Lauder Brunton[8] held the view that the origin was a mixed one. He also gave the most practical detailed and helpful advice as to treatment that I have yet met with.

As a working hypothesis, then, let us take it that the vomiting centre is overstimulated by centripetal impulses, preponderatingly vestibular, but not exclusively so. Rational treatment at once becomes obvious: Diminish the activity of the vomiting centre by means of chloral and bromides, or else lessen the conductivity of the vagus by the administration of atropine.

The atropine method is at present that most in favour, but it has not been satisfactory in my experience, and is certainly not free from danger and unpleasantness. Incidentally, the use as a routine method of this potent drug, either hypodermically or by mouth, in a crowded ship, is not easy. Portier states that hyoscyamine, the left isomer of atropine, is not more toxic and has an activity twice as great. Morphine is not much in favour. On one voyage, however, before I adopted routine rectal treatment, as described later, it seemed to me to have saved the life of a young woman, who vomited from Suez to Calcutta save when under its influence.

Many years ago, crossing the Western Ocean to Canada in bad weather, it became clear to me—from painful personal experience—that chloral in the form of syrup was of the greatest value. But even so slightly unpleasant a preparation as this is impossible to a sea-sick person—just when most needed. It is speedily rejected. Brunton was right in teaching that chloral and bromide, properly used, would, practically at all events, prevent all suffering. The only difficulty is the administration and retention of the drugs. This is easily met by giving them per rectum. Last year, on the North Atlantic, the opportunity for trying this on a large scale occurred: the results were most gratifying. A solution, however, of this kind cannot be left to the unskilled steward or attendant, so I had to make a suitable suppository.

The incorporation of the drugs in the form of a suppository presented considerable difficulty, as the usual bases were quite unsuitable. Messrs. Allen and Hanburys, Ltd., have now prepared suppositories which stand the tropics perfectly. I possess some that have crossed the equator four times, and never left the cabin for the ice-chest. In the rectum they melt readily, absorption is rapid, and no irritation locally appears to follow their use. Two suppositories contain 15 grains of chloral and 30 grains of bromide. These are not large doses: 30 grains of chloral at a dose in a milk enema, two or three times daily, is spoken of as being used by Mir[9] in the vomiting of pregnancy—in many ways related to sea-sickness; and, as a sedative in other nerve conditions 2 or even 3 grams.[10] [11] Such large doses are not within my experience. It is clear, however, that there is no risk in a frequent repetition of small doses. Subsidiary measures should not be neglected. These are recumbency (in bunk in cabin is the best), warmth, keeping the eyes shut, and the use of an abdominal belt. The ideal position for a bunk, where it is possible, would be amidships, on the main deck level—lying fore and aft in the centre of the ship, with the feet pointing to the bow. This is seldom attainable; but the opposites can be avoided. Still, with suitable dosage on the lines mentioned above, such points become of minor import.

This treatment, which I have found so valuable, possesses important advantages over oral methods of administration: (1) The therapeutic action of the drugs is certain, because no gastric disturbance can interfere with it. (2) Absorption of the drug is more certain, and the effect is prolonged. (3) It causes no gastric disturbance such as occasionally results from the use of other remedies for sea-sickness.

The best results are obtained by using the suppositories in the following manner: As a preventive, one should be inserted morning and evening for the first three days at sea. If the patient is sick when first seen a suppository should be administered at once, and repeated every two or three hours, as required, for four doses. If the sea passage is short, a suppository should be used three hours before going on board, and again before the ship starts. There is no danger whatever provided the administration is stopped when somnolence supervenes.

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CURE OF UTERINE PROLAPSE BY RE-EDUCATION OF THE MUSCLES CONSTRICTING THE VAGINA.

BY

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THE muscles which close the vagina (in common with other muscles whose physical relationships are greatly changed during pregnancy and parturition) are liable to lose their normal habit of tonic contraction after the cessation of the distension to which they have been temporarily subjected. When the "vaginal" muscles are subject to this loss of tone, prolapse of the uterus is liable to follow, and if the support normally given by the vaginal sphincter and the fibrous tissues associated with it be lost (owing to the parts being torn during parturition) the liability to uterine prolapse is greatly increased.

If the tone of these muscles which tend to occlude the vagina be tested in a case of uterine prolapse it is usually found to be decidedly poor, and in extreme cases the laxity of the vagina may be so considerable that no form of pessary can be retained. Fortunately, however, although the habit of tonic contraction of these muscles be lost, the power of voluntary contraction is not as a rule also lost; and when during a vaginal examination the patient is told to contract, so far as she is able, the muscles of the pelvic floor, it is found that some muscular compression is exerted upon the fingers in the vagina, either by the sphincter proper or by the other muscles which have the power of constricting it. Voluntary contraction of these muscles can be as a rule brought about by asking the patient to contract the sphincter and the levator ani, by "tightening herself up" as if she were endeavouring to control a sudden attack of diarrhoea.

When any voluntary control of these muscles is present the re-establishment of full tonic contraction is only a matter of time, for (as is the case with most muscles of this type) the frequent repetition of voluntary contraction soon restores a lost habit of tonic contraction. The patient's attention is therefore drawn to the fact that the vagina is tightening upon the examining fingers when she makes this special type of effort; and she is asked to make, and then to cease making, the effort several times in succession till she has a further knowledge of what is required of her. She is then told to contract these muscles of the pelvic floor many times during every hour of the day, and to maintain the contraction as long as she conveniently can. If these rules are carried out—as they easily can be—the muscles which diminish the lumen of the vagina will in a very few weeks greatly increase in vigour; so much so that within two or three weeks they will be able to grasp a single finger with more force than they could grasp two fingers at

the first examination. In such a case the continuance of the voluntary efforts will in a very few weeks so re-establish the habit of tonic contraction that a prolapsed uterus can be retained in place without any mechanical support, provided that the patient remembers to make a special voluntary contraction of the muscles of the pelvic floor whenever an effort is made which is specially liable to cause a descent of the uterus.

In some cases the contraction of the muscles which close the vagina is so feeble that when the patient is first seen she herself is not conscious of any activity in them, although they do perceptibly tighten upon the two fingers in the vagina. If after a fortnight's exercises this same condition persists, it is advisable, when doing the exercises, that the patient should insert her own fingers into the vagina so that she may the more readily learn the type of effort she has to make.

The effectiveness of this treatment is shown by the fact that, even when there has been an amount of tearing sufficient to prevent the sphincter vaginae from taking any part in the support of the uterus, the patient may nevertheless be able to maintain her uterus in its normal position without the need for a pessary, as in the second case here referred to.

As a consulting physician I naturally do not meet with many cases of uterine prolapse, and cannot therefore give a large number of cases to illustrate this method of treatment. I will, however, report two cases which are sufficient to prove the truth of the proposition here stated.

The first was a married woman, aged between 30 and 40, the mother of several children, who came to see me as an out-patient at the Birmingham General Hospital, nearly twenty-five years ago. She was suffering from neurasthenic symptoms due largely to the fact that she had a very severe uterine prolapse, and the cervix would protrude from the vulva whenever she made a slight effort. Moreover, the vagina and its sphincter were so relaxed that she was unable to retain any form of pessary, and she told me that she was advised to have complete hysterectomy. After some difficulty I was able to re-establish voluntary control of her vaginal muscles, with the result that in a few months' time she was completely cured. Although able to retain a pessary she did not need one, and had not any further trouble from her uterus, and, *pari passu*, her general health also greatly improved.

The other patient was seen by me in April, 1924. She was suffering from colon trouble, and also from uterine prolapse due to being badly torn at her last confinement, and had to wear a ring pessary to prevent uterine prolapse. She had been advised operation, and wished for my opinion as to its desirability. On examination I found that the perineal tear prevented any effective action on the part of the sphincter vaginae, but that when the patient contracted her levator and sphincter ani there was a noticeable but slight contraction of the vagina upon the two examining fingers. When seen ten days later she was able to grasp a single finger when inserted into the vagina, closing up its lumen sufficiently to prevent any descent of the uterus. She was advised to continue the exercises for another week, and then have the ring removed. This was done, with satisfactory results. She was seen after having been a fortnight without a pessary, and was able to report that the cervix had not once been outside the vulva since the removal of the support. The position of the uterus was found on examination to be normal. By the exercise of care she prevented any return of the prolapse, and when seen two months after her first visit was practically cured of her prolapse.

THREE CASES OF MEDICO-LEGAL INTEREST.

BY

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THE three cases here recorded are all of a remarkable character. The first is that of a man who committed suicide by cutting his throat. It is well known that in such cases injuries may be inflicted of such severity and extent that a medical man is apt to put suicide out of the question and to attribute them to murder. It is advisable, therefore, that cases of self-inflicted injuries in which such doubt may arise should be put on record. The second case is that of a young woman in labour who threw herself from a window 80 feet above the ground. It is of interest on account of the peculiar injuries to mother and child, and of the fact that she was able to carry a child to term without anyone suspecting her of being pregnant. The third case, that of an infant who fell from a height of 45 feet without injury, seems almost incredible when one recalls the injuries produced by falls of comparatively short distances, and also the terrible results of precipitation from windows of high buildings.

CASE I.—*Suicidal Cut Throat in which the Transverse Process of a Cervical Vertebra was Cut Through.*

A labourer was found dead one morning by his landlady with his throat cut. He had been a fairly healthy man and had had no serious illness up to ten weeks before his death, when he had apoplexy, his speech being affected and his right arm and leg partially paralysed. He was admitted to hospital, where he remained for ten weeks, being discharged, at his own request, two days before his death. His landlady states that she noticed that his speech was still affected. Two days after his return home he went to the parish offices to obtain relief; in this, however, he was not successful, and appeared to be worried in consequence. He retired to bed about 9.30 p.m. The next morning he was found dead in bed, lying on his back, his arms lying across his chest, a razor under his right arm, and his throat cut.

On examination the thyroid cartilage was found to have been practically hacked to pieces, there being seven distinct cuts through the cartilage. The oesophagus had been opened into on the right side, both jugular veins had been severed, the carotid artery on the left side had been opened, and the left transverse process of the fifth cervical vertebra had been cut through, the severed part lying free in the tissues of the neck. The surface of the bone was cleanly cut through and had no appearance of having been broken.

CASE II.—*Precipitation of a Woman in Labour from a Window 80 ft. from the Ground: Peculiar Injuries of Mother and Child.*

A female clerk, aged 17½ years, was found unconscious and in a dying condition at 5.45 a.m., having apparently jumped from the sixth story of a tenement house—a distance of 80 ft. A neighbour, hearing a thud and moaning, looked out, and seeing the body lying in the back yard, called the police. On their arrival it was found that she had given birth to a child, which was lying dead between her legs. No one seemed to have suspected that she was pregnant, and she had played in a hockey match five days before. About mid-day, on the day before her death, she had complained of a pain in her back and had been allowed to go home; she had severe pains during the afternoon, but about 6 o'clock a friend called to see her and they arranged to go to the theatre together that evening. She did not go, however, but retired to bed. About midnight her mother saw her and gave her something to drink, when she said that she felt better. A chair was found at the window of her bedroom, upon which she had evidently stood before throwing herself out.

A *post-mortem* examination was made the next day. There were no external marks of injury except just above the popliteal space on both legs, and slightly to the outer sides there was a linear, transverse wound, in each case about four and a half inches in length, passing completely through the skin and subcutaneous tissues. No other structures were involved. These wounds were apparently due to a splitting of the skin. There was no projection that could have produced them during the fall. On internal examination the uterus was found to be ruptured; the rupture was five inches in length and passed completely through the uterine wall at the fundus, and down to the right side. The os was fully dilated but was not torn; the vagina was extensively rent from the right fornix to within an inch and a half of the vaginal orifice. The perineum was ruptured. There was a fracture dislocation of the sacrum from the innominate bones, the free edge of the sacrum on the right side projecting into the pelvis. There were no other fractures and the abdominal organs were uninjured. The body of the child showed that it had reached full maturity; the placenta was still attached to it by the umbilical cord, but pieces of placenta were found in the cavity of the uterus. The scalp had been torn from half an inch above the right eye round the head, above the left ear to the mid-line at the occiput, being practically detached over the whole of the left hemisphere. The injury to the scalp showed sharply divided edges as though cut with a sharp instrument. The frontal, parietal, temporal, and occipital bones were extensively fractured and the bone lacerated.

It is interesting that a young girl of 17 was able to carry a child to full time without anyone, not even her mother and sister, suspecting that she was pregnant, and at the same time was leading a very active life, even playing in a hockey match five days before. Labour evidently commenced at mid-day when she went home from her office, and continued into the early hours of the next morning, when, in a frenzy, she precipitated herself from the window. Apparently she landed on her heels with legs extended and trunk inclined forward, the sudden hyperextension of the legs splitting the skin and causing the two curious symmetrical wounds referred to above. The ablation of the scalp and fractures of the skull of the infant were caused by the shock of the fall, the head being thereby forced through the pelvic canal and the scalp torn by the projecting edge of the dislocated sacrum, while the rupture of the uterus was produced by the feet, at the same time, being driven through the fundus.

CASE III.—*Fall of an Infant from a Height of 45 ft. without Injury.*

A baby 11 months old was taken to the Royal Infirmary having, it was stated, fallen from a fifth-story window. The infant suffered from shock, but the only injury that could be found was a slightly bruised buttock. She was detained for observation; all that was noticed was that instead of being a lively child she was very quiet. After three days she was discharged as no serious injury could be found. The absence of injury was so striking that it seemed probable that the history and the distance fallen had been much exaggerated. In view of this I visited the scene of the accident and interviewed the eye-witnesses. The mother stated that whilst she was working about the house the baby had crawled on to a low stool beside an open window, the lower edge of which was only about 2½ feet from the floor. The window was on the fifth story of a tenement house and was about 45 feet from the ground. The child fell to the pavement of the street consisting of large stone flags, almost hitting a neighbour who was leaning out of the window below and who stated that had she known the child was falling she could have caught it.

The accident occurred over a year ago and since then the child has been visited on several occasions with a view to ascertaining if any after-symptoms developed. The last visit was a few weeks ago, when the child was found to be in good health and in all respects normal. The absence of injury might be more easily understood if the child had been wrapped in thick woollen shawls, but at the time she was wearing a flannel vest and two cotton petticoats. That the petticoats acted as a parachute, and to some extent broke the fall, seems out of the question when their nature and size are considered.

OVARIAN CYST COMPLICATING LABOUR.

BY

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THE following case presents certain interesting features which make it worth putting on record.

On August 3rd, 1924, Mrs. T., aged 25 years, a 2-para, and living in a somewhat remote country district, was attended in her third confinement by two medical men. Her two previous confinements had been quite uneventful and of such recent date that no difficulty with the third child was anticipated. Labour at first proceeded normally; then it was found that the head was not advancing as rapidly as it should have done, and examination demonstrated an occipito-posterior position. Under an anaesthetic the occiput was rotated forward and forceps applied. As the head was being drawn down a lump was felt coming down in advance of it, and this lump was delivered somewhat precipitately immediately before the head was born; the child, a healthy living male, was then extracted without any difficulty, and the placenta was expressed shortly afterwards. The lump appeared to be a cyst, and as the woman showed obvious signs of shock it was deemed advisable to bring her into the Lloyd Hospital, Bridlington. The baby had been delivered at 2 p.m., and the patient arrived in hospital shortly after 6 p.m. As the above details had been given to me before her arrival I decided to defer any examination until she had been anaesthetized and placed on the operating table.

As soon as possible after her arrival an anaesthetic was administered by Dr. C. R. Taylor and the patient put up in the lithotomy position. Investigation then revealed a rounded cystic tumour, four inches in diameter, protruding through a rent in the perineum. The posterior vaginal wall was quite undamaged except for a tear of about half an inch at the junction of the mucous membrane with the skin. On drawing the cyst gently downwards the fimbriae of a Fallopian tube could be seen spread out over the upper portion of its circumference. The cyst was attached by a broad pedicle covered by peritoneum, which could be traced up into the abdominal cavity through a hole in the floor of Douglas's pouch. An effort was made to sterilize the parts by a liberal application of eusol, and then the pedicle was ligatured as high up as possible by a series of interlocking catgut sutures which included the accessible portion of the presenting tube; the cyst and attached portion of tube were then removed and the pedicle returned within the abdominal cavity. The tear in Douglas's pouch was closed by means of a purse-string suture, and repair of the perineum carried out in layers as in an ordinary perineoplasty. No drainage was provided. The cyst on examination proved to be an ovarian dermoid containing sebaceous matter and a large mass of hair.

Subsequent progress was satisfactory for the first four days, then abdominal distension set in, accompanied at first by diarrhoea; symptoms of obstruction developed, and on August 9th I opened the abdomen in the middle line. The peritoneal cavity contained a large quantity of clear dark-brown fluid; the small intestine was greatly distended. The obstruction, which was located in the left iliac fossa, involved the small gut about three feet from the ileo-caecal junction and was caused by a fibrino-plastic band of adhesions. The band was divided and the obstruction relieved. The opportunity was taken to examine the ovariotomy stump: its condition was quite satisfactory; it was found that it had been the right ovary and tube which had been involved. The patient never rallied from this operation and died eight hours afterwards.

One of the chief points of interest in this case is the path followed by the cyst in its escape from the abdomen. The posterior vaginal wall was pushed forward and stood the strain without giving way except for the small tear at the vulvar orifice. It is noteworthy that the cyst was delivered intact in spite of the enormous stresses to which it was subjected, and bleeding from the damaged parts was practically negligible.

It is unfortunate that sepsis brought about a fatal termination of the case, but the danger of this from the first was realized as being very serious. The risk run by draining through the perineal wound was considered to be greater than that incurred in closing the wound completely; as events turned out this view was possibly mistaken.

There is a lesson to be learned from the history of this case: the first two labours were entirely uneventful, and the second child was born less than two years before this catastrophe; yet it is hardly possible that the cyst was not present at the time of the second labour; the chances are it was present in the first labour as well. The case certainly supports the contention of those who urge that vaginal examination should be an integral part of the routine ante-natal examination. A well timed Caesarean section would have avoided the tragedy of a living child and a dead mother.

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, BRADFORD, 1924.

SECTION OF SURGERY.

Sir CUTHBERT WALLACE, K.C.M.G., C.B., F.R.C.S., President.

THE CLINICAL FEATURES AND DIAGNOSIS OF HYDRONEPHROSIS.

BY

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(*With Special Plate.*)

ONLY the shortest outline of this subject is possible in the brief time that is allowed for this communication.

I am dealing with the pelvic type of hydronephrosis, commonly called intermittent and sometimes described as congenital. My remarks are based on personal observations made upon 23 cases and a review of 27 other cases.

A study of the age incidence shows the disease to be much more common in the third than in any other decade. It may, however, commence very early or very late in life. It involves either kidney in about equal frequence. It is twice as common in the female as in the male. From my investigations it appears that in hospitals where a predominant proportion of beds is not given over to male patients, and where all suspicious cases are investigated by the proper methods, it is one of the commonest renal conditions requiring surgical interference.

The signs and symptoms are inconstant. The so-called cardinal symptoms—intermittent attacks of colic associated with a palpable renal enlargement, both of which signs disappear as a result of an abundant discharge of urine—are seldom in evidence. Pain in attacks is the most constant symptom, and is most severe in the earliest cases. In exceptional instances pain may be quite absent. A palpable enlargement of the kidney is as often absent as present, and the passage of an abundant quantity of urine terminating the attack is a rare manifestation. Frequency in attacks or a chronic form occurs in a considerable proportion of cases. It is due to pyelitis, evidence of which was to be seen in all of the kidney specimens that I had an opportunity of examining.

The following case which I investigated is a good example of the absence of physical signs.

Fig. 6 is a pyelogram of a very definite hydronephrosis which occurred in one case. The patient, a female aged 23, had had attacks of pain in the right side for three years. The patient had been palpated many times by experienced clinicians and no renal enlargement detected.

Haematuria is a not uncommon complication: it results either from superimposed infection or from obstruction to a vein by pressure between an artery and the distended pelvis. (Fig. B.)

Infection may complicate the hydronephrosis at any stage, but in many there is an extreme degree of dilatation before pyonephrosis results. Some effect on the general health, although not striking in some cases, was a constant sign in some degree with all cases of hydronephrosis that came under my notice.

Laparotomy and Lumbar Exploration of the Kidney.

Palpation of the kidneys during a laparotomy cannot detect the disease in its early stage. Even a fairly advanced condition may be missed if the kidney is not distended at the time. The importance of establishing the diagnosis is not only that the kidney may be dealt with, but that useless

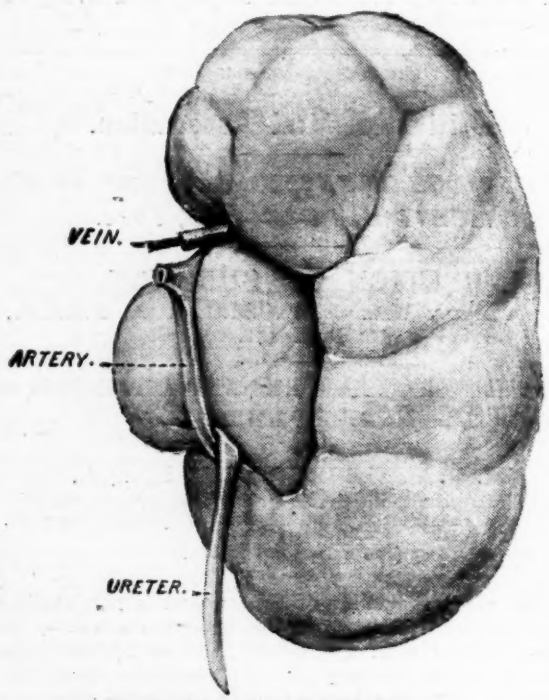

FIG. A.—From Guy's Hospital Museum.

operations on other organs may be prevented. Considering the certainty with which the question of hydronephrosis can be settled by an expert cystoscopist, any operative exploration for diagnostic purposes is quite unjustifiable. The following is a good example of the necessity for a special investigation in an early case.

A male, aged 29, was sent to me on account of recurring attacks of right-sided pain of increasing frequency over a period of three years. Latterly the symptoms had occurred so often and with such severity that he had to give up his work. A pyelogram revealed an early but definite hydronephrosis (Fig. 3). Neither his medical attendant nor I had been able to detect any swelling in the side. From an inspection of the kidney at operation it was almost impossible to be certain from its appearance that it had been the seat of pain, so little was its contour altered. In the knowledge of the pyelographic appearance, however, I had no hesitation in removing the kidney, after deciding that a conservative operation was out of the question. The patient had no subsequent attacks.

Pyelography.

As a routine measure in the examination of the urinary tract this procedure is seldom required. With regard to hydronephrosis, in the hands of one who understands its contraindications, is familiar with its technique, and can interpret its results, pyelography is free from danger, and settles the diagnosis finally. Fig. 1 is a pyelogram showing normal pelves and calyces. Note the rounded concavity formed by the outlines of the lower calyx, lower border of the pelvis, and the upper end of the ureter; also note the absence of broadening of the calyces. Figs. 2 to 8 represent a fairly uniform gradation of distension from a very slight to a marked degree. Fig. 2 shows the earliest stage of dilatation. It is not a hydronephrosis. The appearance is not due to overdistension by pressure, as the fluid was run in by gravity. Fig. 3 shows a further stage which is definitely hydronephrotic, while Fig. 4 still further indicates to what extent the disease can first involve the pelvis without bringing about any obvious change in the calyces. In Fig. 5 the changes in the calyces are apparent. In Fig. 6 a more advanced stage is demonstrated. Here the distension is well-marked in all of the calyces as well as in the pelvis. The outline of the pelvis and of the calyces in Fig. 7 is not shown uniformly, while in Fig. 8 the calyces are not indicated at all. This lack of clearness is due in each case to an uneven distribution and to dilution of the opaque medium by residual urine in the kidney.

The Investigation of a Case suspected of Suffering from Hydronephrosis.

Cystoscopy is carried out as a part of the routine examination of the urinary tract, and the intravenous injection of

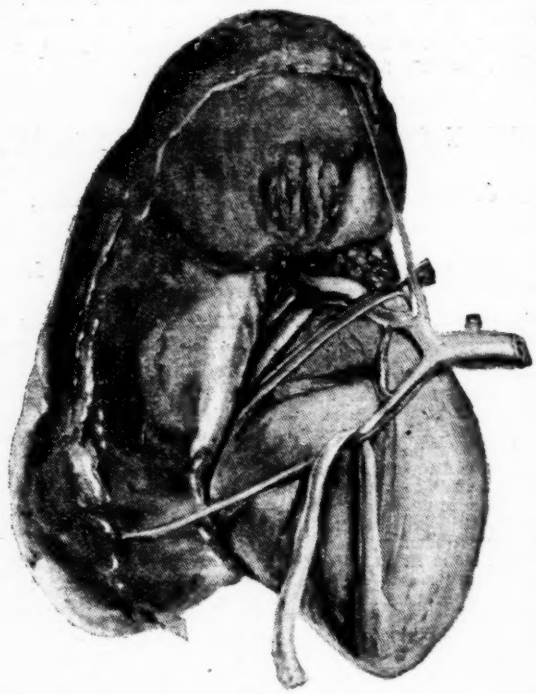

FIG. B.

0.4 per cent. indigo-carmine at this stage gives a rough indication as to whether a hydronephrosis is likely. Even the earliest cases cause a few minutes' delay in the excretion of the dye, while in the more advanced ones the delay is considerable.

An abnormal quantity of urine may sometimes be aspirated from the kidney through the ureteric catheter by a syringe. In a recent case I withdrew 200 c.cm. of urine in this way from the left kidney. Pyelography was therefore considered superfluous and was not carried out. The hydronephrosis was subsequently removed. Failure to withdraw residual urine from a kidney does not, however, exclude hydronephrosis. In carrying out the pyelogram shown in Fig. 8, I was unable to aspirate any fluid from the kidney either before or after the injection, although there was clearly a large quantity of residual urine present.

Pyelography should follow when hydronephrosis is suspected. The cystoscope is introduced on the *x*-ray couch. After the ureteric catheter is passed the bladder is emptied and the cystoscope withdrawn. The elevated position of the pelvis necessary for the cystoscopy is maintained for the pyelography. Any residual urine that can be obtained from the kidney is withdrawn, and the opaque medium* is

*Sodium bromide 20 to 25 per cent. is the most popular and satisfactory.

injected through the catheter by gravity or by the gentlest possible pressure with a syringe. A feeling of discomfort in the loin indicates that distension is complete, and that no further force should be used. The radiographic apparatus should all be previously arranged ready for the exposure, so that this may be made the moment full distension is reached. The injected fluid is withdrawn from the kidney as soon as the exposure is finished. The ureteric catheter is left in position until the radiogram is developed and inspected. If the result is unsatisfactory the injection and the exposure must be repeated.

In children anaesthesia is necessary. The injection must always then be performed by gravity entirely. It is perfectly safe and satisfactory by this method, but it may be necessary to expose several plates to note the progress of the injection. Fig. 1 is a pyelogram which I carried out in this way on a child of 12.

In some cases of hydronephrosis, owing to different forms of obstruction of the ureter, it may be impossible to withdraw residual urine from the kidney, or to cause the entrance of the injected material into the pelvis. Failure to withdraw the injection may result from similar causes. When this occurs pyelitis may supervene. Therefore a careful watch on the patient for several days is necessary, with a view to hurrying on the operation on the hydronephrosis if signs of severe infection become established. I was unable to withdraw the injection after carrying out the pyelogram shown in Fig. 8, fortunately without any unpleasant consequences. Figs. A and B are illustrations of varieties of ureteric obstruction.

In attempting pyelography on the kidney represented in Fig. B I had found it impossible to demonstrate any opaque fluid in the renal organ. It has previously been noted that no dye was discharged from the corresponding ureter. I concluded that a hydronephrosis was present with an obstructed ureter. The tumour had never been identified by palpation, although the abdomen had been opened two years previously.

It is unnecessary and dangerous to carry out pyelography on large palpable hydronephroses. Intravenous indigo-carmine in conjunction with cystoscopy is thoroughly reliable for diagnostic purposes. There is considerable delay in the excretion of the dye from markedly dilated kidneys. The blue is usually not detected at all. The following case is a good illustration of the value of the colour test.

The patient was a man, aged 53, in whom I investigated the nature of a cystic swelling occupying the whole of the left side of the abdomen. The swelling appeared to be a hydronephrosis. Cystoscopy and intravenous indigo-carmine showed the dye from the right ureter in eight minutes and from the left in nine minutes. Such a quick excretion I knew to be impossible from a hydronephrosis of such a size. I therefore felt confident that the swelling was due to another cause.

At an operation subsequently performed by Mr. Joseph Cunning, a unilocular serous cyst, holding about two quarts of clear fluid, was evacuated and resected from a small origin on the anterior surface of the left kidney. The patient made a good recovery.

The Investigation of the Opposite Kidney in a Case of Hydronephrosis.

There is always the possibility that the other kidney has a tendency to hydronephrosis, with one side only causing discomfort. It is important to settle the question by pyelography, as nephrectomy must be avoided if both kidneys are affected. When practicable it is wise to postpone the second pyelography until fourteen days after the first examination. If one kidney only is investigated in this way, at least the functioning capacity of the opposite organ should be ascertained.

Investigation of Infected Hydronephrosis.

A kidney which is discharging turbid urine should not be investigated by pyelography. The effect of the pyelographic fluid will be to increase the existing infection. A persisting purulent efflux from the ureter in question is generally sufficient cause for exposing the kidney by operation.

In conclusion I wish to express my indebtedness to the staff of the Royal Free Hospital for the unrestricted opportunities they have always afforded me for making use of the abundance of clinical material which is constantly available in the hospital.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

T. GRAINGER STEWART, M.D., F.R.C.P., President.

DISCUSSION ON THE NATURE AND TREATMENT OF EPILEPSY.

OPENING PAPER

BY

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IN opening this discussion upon the subject of epilepsy, I will in the first place submit to you that investigations of recent years have brought no great discoveries to alter fundamentally our conceptions of causes, nature, and treatment of this important class of diseases, nor, indeed, to help very much in the manifold difficulties which beset us in its investigation and treatment.

But progress has been made towards a much wider conception of epilepsy and the possibilities of its nature, and also towards bringing into line, both pathologically and clinically, all those conditions in which the manifestations resemble or are identical with those of the malady which we are accustomed to term "idiopathic epilepsy." There has also been some useful work done in the separation of certain clinical types of epilepsy, both with regard to clinical manifestations, prognosis, and treatment—such as "pyknolepsy," "myoclonus epilepsy," and "affect epilepsy." Much that was dogmatic and at that time universally accepted in the older writings upon epilepsy is tending to disappear from the more recent descriptions of the disease, and there has been one valuable addition to our therapeutic measures for its treatment.

The clinical manifestations of epilepsy described in ancient times, and added to by every writer upon the subject, are definite, and, like all honestly compiled clinical records, will stand for all time and are incontrovertible, and all that is left for us is in the way of addition. The causation, the pathology, and the best methods of treating the disease are, on the other hand, unsettled, largely unproved, difficult, and highly controversial, and admit of fruitful discussion. So that any one of us may legitimately hold any opinion upon these matters which his experience may have led him to, and may justifiably express such ideas with the certainty that no one can entirely contradict him, and with the likelihood of adding something useful to our knowledge of this subject.

I shall in the first place invite your discussion upon certain facts bearing upon the pathology of epilepsy. The descriptions of former times generally began with "Epilepsy is a disease of the brain." I submit to you that in the majority of its instances epilepsy is certainly not a disease of the brain. Possibly in all cases it is never truly a disease of the brain. Oppenheim has recently described epilepsy as "a toxicopathic condition with cerebral manifestations."

Experimental work has shown that if you wish to produce epilepsy in a susceptible lower animal, such as the cat or dog, you cannot do so by any mechanical interference or injury to its central nervous system. You can only succeed by introducing a convulsant poison into its anatomy—as, for example, picrotoxine, lead, and many other poisons; or you must produce a metabolic dyscrasia in the animal by depriving it of some of its important metabolic organs—for example, the thyroid and parathyroid glands. It has been said even that animals so "epilepticized" by absinthe may have epileptic progeny.

Now we have ample knowledge that in the human subject poisons from without—such as lead, bismuth, absinthe, and those developed within the body, as in the infectious fevers and metabolic dyscrasias, such as occur in rickets, in renal disease, in hepatic disease, in puerperal eclampsia,

and in thyroid and pituitary diseases—are capable of producing manifestations in every way indistinguishable from those of epilepsy. And there is further the immensely important fact that it is on record that there is not one of these toxic or metabolic causes of epileptic manifestations that has not been followed by an established recurring epilepsy although the original exciting cause has ceased to exist. It is astonishing to find in almost every description of the disease which we are discussing the statement that infantile convulsions are quite distinct from epilepsy, and one is given the reasons for this statement, which never seem to me to be clinically sound. One turns over a page or two to find the very proper fact that a great many cases of established epilepsy have their origin in the convulsions of early infancy. There can be no stronger argument than this, that infantile convulsions are epileptic in nature and that they should be so regarded and treated. I submit to you that the argument may be correctly applied to all the symptomatic convulsions that we meet with, whether these be the result of lead poisoning, uraemia, eclampsia, or infections, since, as I have already stated, all these several conditions may be the starting points of established epilepsy. From this it follows that epilepsy may have its cause in many different conditions of metabolic dyscrasia.

It seems to me that there are so many clinical features of epilepsy which argue strongly in favour of a metabolic disturbance as the cause rather than any condition of cerebral instability, irritability, or habit.

1. In the first place there is the periodicity of epilepsy, with its often amazing regularity, the attacks occurring always at night or at regular intervals, or only at the menstrual epochs. And, more strikingly, those cases in which batches of fits at long intervals occur, sometimes many in one day—and during the long intervals nothing can induce the patient to have a fit. Surely such periodicity is more reasonably explained on the grounds of a metabolic dyscrasia—now present, now absent—than on any hypothesis of cerebral irritability, instability, or functional derangement.

2. It is usual for the epileptic woman to have complete immunity from the attacks during pregnancy, and I think that this can only be explained on the grounds of the correction of a faulty metabolism in the mother by that of her foetus. On the other hand, epilepsy may occur only during pregnancy, and with repeated pregnancies, and this form surely belongs to the category of eclampsia and should be attributed to the same anaphylactic cause.

3. Status epilepticus is, in my opinion, only explicable on the grounds of an acute toxic process. It closely resembles experimental convulsions from the exhibition of poisons, and in some measure also is akin to eclamptic and uraemic convulsions, and is the commonest event by which epilepsy in itself causes death. It arises often in a patient who has had no fits for a very long time, and whose cerebral condition may therefore be deemed to be more stable than in the epileptic who has frequent fits. Sometimes overexertion is the immediate exciting cause, sometimes the discontinuance of medicinal treatment by the bromides or other remedies. Sometimes no exciting cause can be attributed. The attacks begin and recur with increasing frequency and severity in spite of the complete abrogation of cerebral function, and death is the common result, notwithstanding any treatment that may be adopted. Now I have in several cases of status epilepticus arrested the convulsions, restored the patient to consciousness, and secured adequate nutrition, and yet death has occurred after a few days from cardiac failure with a rising temperature. What is most important to remember is that in these cases the autopsy showed the most acute and intense fatty degeneration of the heart muscle, which, so far as I am aware, is the invariable finding in fatal status epilepticus, and which was first pointed out many years ago by Sir Frederick Mott. Such fatty degeneration must surely be the result of an acute toxaemia which is at the same time the cause of the external manifestations in status epilepticus.

4. It is a remarkable fact that the habitual epileptic person shows immunity from so many of the common diseases which are the plagues of the world—such as the specific fevers of childhood, tuberculosis, pneumonia, and carcinoma. And the epileptic shows this immunity in common with the subjects of infantilism, or of idiocy, or of cerebral diplegia, in all of which diseases we have ground for believing that a perversion of the body metabolism is the essential cause. And this fact favours the belief that in the epileptic subject metabolic perversion is a fundamentally important matter. I suggest that the peculiar bodily and mental make-up which is common to so many habitual epileptic persons is an expression of this same metabolic error, and that the mental deterioration, mental aberration, and terminal dementia are the results upon the brain of this same process, either by way of deprivation of activators or long-continued poisoning. The prodromal symptoms of the epileptic seizure, or of a series of epileptic seizures—sometimes in the way of exaltation, excitement, and restlessness, sometimes expressed in headache, lethargy, and feelings of bodily illness—are surely the indications of some bodily change which culminates in the paroxysm.

I have been speaking somewhat easily upon the presence of a metabolic dyscrasia as the cause of epilepsy. What actually do we know that is definite fact and not hypothesis upon the nature of the dyscrasia, if such exists? We know that convulsant poisons will produce the usual manifestations of epilepsy, and that some of them—lead and absinthe, for example—are capable of permanently epilepticizing both animals and the human subject. We have the observations of the constant leucocytosis, increased at the time of the paroxysm; we have the work of Pugh on the diminished alkalinity of the blood both before and after the fit. There is the discovery of choline in the cerebro-spinal fluid of epileptics by Donath, and Mott's experiments showing the potency of choline in producing both convulsant and paralytic phenomena when applied to the surface of the brain. There are the parallel phenomena of uraemia, with trimethylamine as the probable convulsing agent, and of eclampsia with an unknown convulsing agent. There has been Haig's uric acid theory, with its consequence in purine-free diets and no particular benefit to the patient. Krainsky's ammonium carbamate and Ceni's cytotoxins are also largely hypothetical. There have been the attempts to desensitize the epileptic patient between his attacks by the injection of his own serum, collected at the time of an attack, for which good results have been claimed. Certain followers of Abderhalden in the New World would have us believe that the cause of epilepsy in a fault of one particular endocrine organ has been definitely settled, but I think there is very little evidence in fact or in probability for this view at present.

I refer very briefly to the theory of "anaphylactic shock" as the immediate cause of the epileptic attack, which has been raised by Bossard, based upon the leucopenia and the fall in blood pressure which immediately precede the attack, and to the researches of Tinel and Santanoise, who have shown the existence in their patients of alternating periods of sensitiveness and immunity. The well known tendency for epileptic fits to disappear for the time being, during acute infections and after the injection of foreign serums and proteins, has suggested that protein therapy might be useful in epilepsy. But though it has been tried in many hands the results so far have not been convincing.

The toxic effect of the serum of epileptic patients at the time of the attack has been investigated by Pagniez, Mouzon, and Turpin, who found that when such serum was injected either into the heart or into the carotid arteries of animals a series of convulsions occurred which lasted some half an hour and which often ended fatally. No such convulsions occurred with blood serum from healthy persons nor from persons suffering from uraemia or general paralysis.

There have quite recently been some very interesting observations upon calcium metabolism in epilepsy. It has been long known that in rare cases of tetany—a disease provedly due to disorder of calcium metabolism—general epileptic seizures with mental symptoms do occur, and doubtless it was some such phenomena as these which led

Bastin to the conviction that epilepsy could be a manifestation of thyroid disease.

However plausible and however probable the contention that epilepsy is fundamentally a metabolic dyscrasia may be, yet it is largely deductive and hypothetical rather than proved by facts. It is a good working hypothesis—indeed, it is far the best so far as treatment is concerned, and it would be satisfactory were it not for the fact that local disease of the brain may give rise to every phenomenon which has been described in the symptomatology of epilepsy, with the single exception of status epilepticus, and even this exception may be disputed. From the simplest attacks of petit mal, all through the local seizures to the most general seizures, all occur commonly enough from gross lesions of the brain.

Yet I would draw your especial attention to the remarkable fact that only a small percentage of gross injuries to the cerebral hemispheres are followed by epilepsy—something under 8 per cent. of the cases. In the great war the statistics showed that some 5 per cent. of such cases became epileptic. In gross lesions of the cerebrum other than injuries the percentage is higher, but it is still quite low. And in cerebral tumours the incidence of epilepsy is by no means commensurate with a cortical location. In disseminate sclerosis, where multiple lesions of the hemispheres often involving the cortex are present, how rare epilepsy is. Yet in rare cases it is a conspicuous feature of this disease. Again, in cerebral vascular lesions the incidence of recurring epilepsy in those who survive is small. Even with such lesions as those of general paralysis, meningitis, and encephalitis the incidence of epilepsy is not invariable, and in some forms of encephalitis it is very small. The vascular and inflammatory lesions seem more often to lead to epilepsy when occurring in childhood. From this irregularity of the incidence of epilepsy in lesions of the brain it would seem that it is not the lesion itself which causes the epilepsy, for in that case every lesion should cause epilepsy. But the epilepsy is due to some associated condition not necessarily present with every lesion. The ancient attempt at explanation was that certain lesions were "irritative" and others were not. Mr. Sargent, in his presidential address to the Neurological Section of the Royal Society of Medicine in 1921, supported this conception, and sought to explain the occurrence of epilepsy after injury to the brain by local adhesions and other conditions causing tissue unrest, which in his opinion and experience were sometimes benefited by surgical interference. This has not been the experience of some of us. I myself have never seen any case of traumatic epilepsy benefited by operation, and I submit that Pierce Clark is justified in the rule which he lays down, that "all operative measures upon the brain in epilepsy are allowable only when they are indicated by definite physical signs other than the epilepsy." Further, it is most necessary to bear in mind that the so-called organic epilepsy is highly amenable to medicinal treatment. Yet medicinal treatment is too often sadly neglected in such cases.

The origin of epilepsy in injuries to the head introduces a very real difficulty in the acceptance of metabolic dyscrasia as the fundamental cause of this group of diseases. But in some of the traumatic cases it is not only possible but highly probable that the epilepsy has its origin not in the injury to the brain but in the fright and emotional disturbance which accompany the accident. In others it is possible that the fits are caused by the local liberation of histogenic convulsant poisons in the damaged region of the brain. The commencement of the fits not immediately but some time after the injury fits in with this idea, which seems to me also best to explain the occurrence of fits late in the course of arachnoid haemorrhage and meningitis and those occurring in disseminate sclerosis, general paralysis, and in the progressive degenerative diseases of the brain generally.

Hartenberg, in 1919, opposed the theory which has long been held, that the phenomena of epilepsy result from abnormal excitation of, and release of energy from, the cortex of the brain, and he brought forward what he termed "a new conception of epilepsy," to the effect that cerebral inhibition, and not cerebral excitation, is the initial event in the epileptic attack. He instances the very numerous negative phenomena which occur in epileptic seizures and which often constitute the whole of the epileptic attack—such as the sudden loss of consciousness, the coma, the paralysis, the incontinence, and the extensor plantar responses—as signs of arrest of cerebral function, and he explains the convulsion and the other positive events as release phenomena due to the action of lower centres in the absence of cerebral control. In support of his contention he brings forward the well known fact that in animals in which the cerebral cortex has been ablated convulsant poisons produce epileptic attacks just as readily as when the cortex is intact. In the human subject, too, one sees convulsion occur when disease has reduced the cerebral cortex to a presumably inexcitable condition. Hartenberg affirms that when the cerebral inhibition is slight and brief there is simple loss of consciousness for a moment, as in the common types of petit mal. When it is more severe the patient falls in his attack. When still more severe the lower centres are released from control and convulsion appears. He explains all the phenomena of epilepsy—the auras, hallucinations, automatism, and local events—on the hypothesis of inhibition. He defines epilepsy as "a paroxysmal abolition of the higher functions of the brain by arrest and not by excitation." There is much more to be said in favour of this view of inhibition than of the ancient hypothesis of excitation, and it fits in well with the ideas of arterial spasm as the initial anatomic event in epilepsy. But, with all respect to Hartenberg, I venture to affirm that his theory is not exactly new, for most of his ideas have been well known to the pupils of Hughlings Jackson for many years past.

In the realm of differentiation of varieties of epilepsy Friedmann, Heilbronner, Stier, and Adie have during recent years established a type of this malady to which the term "pyknolepsy" is applied. This malady begins suddenly and without cause in healthy children after the age of 4 years. The attacks are of the nature of petit mal, and are characterized by the monotony of their course, their uniform mildness, and their extreme frequency of occurrence (six to one hundred daily), and by their being uninfluenced by any form of treatment. There is no mental impairment and no physical ill health. After occurring for a variable number of years the attacks cease and show no tendency to return.

I am quite sure that all here present must have seen cases of pyknolepsy. In my thirty years' experience of the treatment of epilepsy I have seen many. It behoves us, therefore, to hold the hope of a good ultimate result in every case of petit mal in childhood where there is no mental impairment and when an ordinary education can be carried on. When there is mental impairment in the petit mal of childhood how different is the prognosis! Pyknolepsy is open to criticism. The separation of this type of epilepsy is valuable. It is a definite type, but is it a definite disease? I submit to you that it merges by every gradation into the more common forms of epilepsy. Shall we in a case which conforms to the type of pyknolepsy, but in which a few major attacks have occurred in the course of years, say that this is not pyknolepsy and alter our prognosis for the worse? I think not.

The term "myoclonus epilepsy" has come into use for those cases in which simple muscular twitching occurs from time to time quite apart from the attacks and without any other mental or bodily disturbance. One of my patients, for example, will often sit in my consulting chair engaged in animated conversation and exhibit incessant twitchings of all the muscles of his body—now here, now there, and generally sufficient to cause some visible movement of body or limb, just as if he were the subject of uraemia. At other times he will show no such twitchings. This condition is interesting as connecting epilepsy with uraemia from a symptomatic point of view. I believe that there are but few major epileptics who do not show this symptom at some time or other. Myoclonus epilepsy must, of course, be clearly separated from those cases of Unverricht's myoclonus in which epileptic fits occur, for in these the myoclonus is a constant and severe feature and it dominates the clinical picture, while the epileptic fits are occasional only.

"Cardiac epilepsy" is a most convenient term for those

epilepsies which are constant in Stokes-Adams's disease and may be seen in congenital heart disease, and I think also in rare instances in any form of heart disease attended with chronic cyanosis, and indeed with cyanosis alone. This condition is often dismissed in descriptions of epilepsy as being merely a matter of asphyxial convulsions, but this explanation does not hold good for the majority of the cases, for in Stokes-Adams's disease the epileptic attacks are not, so far as I have observed, associated with any detectable asphyxia. Nor are the severe degrees of chronic asphyxia which may be observed in erythraemia and certain other conditions ever associated with epilepsy so far as I am aware. The association of epilepsy with cardiac disease and cyanosis is worthy of careful study.

The term "affect epilepsy" has been introduced by Bratz and others for a class of cases in which typical epileptic paroxysms are perhaps rare but in which periodic or paroxysmal events of other natures dominate the clinical picture — such as criminality, degenerate tendencies, depression, moroseness, or psychasthenic or hysterical crises. These patients are said to be peculiar in that they never develop status epilepticus, nor the mental or physical degeneration often seen with epilepsy. They never benefit at all, either from hygienic or medicinal treatment, and they are said always to show a characteristic bodily pallor.

I have little to say upon the diagnosis of epilepsy, which is often so easy, but sometimes so difficult as to require much experience, much observation, and the lapse of a considerable time, and always demanding a scrutinous examination of the patient. I will refer to one point only, and that is the circumstances of the attack, which so often give an indication in cases of difficulty. For example, an hysterical attack never occurs during sleep, nor in surroundings which entail danger or serious discomfort. During the war an officer came under my care suffering from attacks which had been repeatedly observed and certified as hysterical attacks. He was invited to dine with the parents of his betrothed, but did not arrive, and was found lying upon the drive leading to the house in the pouring rain, soaked to the skin, and with his new dress clothes ruined. It is to me inconceivable that an hysterical attack could occur in such circumstances, and in this case which I have cited the subsequent history proved that the attacks were epileptic.

The treatment of epilepsy has in the past provided, and still provides, a field for much controversy. The value of general hygienic measures in the treatment of epilepsy admits of no dispute, but a thirty years' experience has convinced me that the less one departs from the routine of a normal healthy life and the fewer restrictions one makes the better it is for the patient. In the epilepsy of childhood or of adolescent life, for example, I would whenever possible and at any cost continue with a normal course of education, discipline, games, and pleasures, and only make restrictions to safeguard the patient and ensure the peace of mind of the parents. To remove a child from school, to forbid education, discipline, and pleasures, and so to produce the spoiledness and boredom and inanition which lack of occupation entails, has, I am sure, a derogatory effect upon the course of epilepsy. Occupation is good for every epileptic. It is the only thing which does some of them any good. How rarely does a fit occur in any epileptic when either mind or body is at a high physiological level of activity!

Apart from general hygienic principles, it does not appear that dietetic treatment has any effect whatever upon the course of epilepsy. The exclusion of meat, the purine-free diet, and the salt-free diet have been extensively exploited, without bringing any conviction as to their utility. That alcohol should be forbidden to the epileptic as an excitant of fits will, I think, be universally admitted, but even to this rule I have seen a few notable exceptions in patients beyond middle age.

The correction of bodily abnormalities, such as dyspepsia and constipation, intestinal stasis, uterine disorders, etc., has been often considered of high importance, and the treatment of such local conditions has been given the first place, while the essential treatment of the epilepsy has been relegated to the background or neglected altogether. I do not believe that local bodily troubles are important either as causal factors or as excitants of the attacks, nor have I seen their remedy followed by real improvement, with the single exception of conditions of chronic suppuration within the temporal bone.

Thyroid extract has, in the opinion of most authorities, been tried and found wanting, and certainly it may cause an increase of the attacks. But I am quite sure, notwithstanding, that in children who show microcephaly, or degrees of infantilism and backwardness, or cerebral diplegia associated with epilepsy, and also in those subjects who have a low basic metabolic index, regular and careful thyroid medication sometimes proves a valuable adjunct in the treatment of this disease.

The introduction of the malonyl-urea compounds in the form of luminal, gardenal, etc., in the treatment of epilepsy, marks, I think, the most important advance in the medicinal treatment of the disease since the introduction of bromides in 1857 by Sir Charles Locock. These remedies are very potent in the prevention of attacks, they are well borne, and they can be advantageously combined with or alternated with the bromides. They do not seem to affect the general health adversely, or to lose effect with prolonged administration. Though they are powerful drugs they do not require to be used in such doses as to produce unpleasant results. I prefer the insoluble compounds as having a slower and more prolonged action. I am a follower of my former chief, Sir William Gowers, in the conviction that "apart from general regimen for the maintenance of good health the treatment of epilepsy is purely medicinal." I regret very much that one should find such words as these conspicuous in an authoritative and modern textbook upon this subject: "It is a safe rule never to begin the steady use of medicinal remedies until all other hygienic-dietetic plans have been tried." How long is it going to take to try all other hygienic-dietetic measures, which, by the way, of themselves have had no epoch-making results in the treatment of epilepsy? If I may paraphrase the words which I have quoted, they mean this and nothing else: In every incipient case of epilepsy—a correct diagnosis being assumed—never shut the stable door until the horse is stolen. Allow every early case of epilepsy to become well established, and never give your patient the benefit of your knowledge that a malady in its early stages is easier cured than when it is advanced. I do not believe that the habitual use of medicinal remedies for the relief of epilepsy, in such doses as are used nowadays, has any deleterious effect upon mind or body, though I know well that untreated epilepsy often has that effect.

I hold strongly that the remedies which we use to prevent the occurrence of epileptic fits do not act by lowering the excitability of the nervous system. Hartenberg's modern theory that the phenomena of epilepsy are not those of cerebral excitation, but are one and all those of cerebral inhibition, depression, and paralysis, supports my position. I believe that these drugs act by influencing the metabolic dyscrasia, the toxic process, or whatever it may be which is the fundamental cause of epilepsy. This condition of metabolic dyscrasia, this anaphylactic condition, is not constantly present in the epileptic; sometimes it is absent for long periods. In the nocturnal epileptic, for example, I deem that it is not present in the day. From which it follows that wherever one can anticipate the attack with medicinal remedies one has a better result from their administration. I have obtained the best results from giving the remedies in a single dose at night only in nocturnal epilepsy, in the morning only in diurnal epilepsy, and night and morning in epilepsy which occurs both by day and by night. I have a preference for luminal as the morning remedy and for bromide at night. I never give larger doses than 25 grains of bromide and 1½ grains of luminal, and not often such large doses as these. In childhood I use relatively large doses—as, for example, 15 grains of bromide or 1 grain of luminal for a child of 10 years.

I wish to say a few words, in conclusion, in relation to the treatment of status epilepticus, which is said to prove fatal in more than half the cases. Such a high mortality calls for a scrutiny of the time-honoured treatment for this condition, which may be described as consisting in large doses of bromide and chloral by the rectum, the hypodermic

administration of hyoscine, and the inhalation of chloroform, with little attention to the feeding and watering of the patient.

In view of what we know of the pathology of status epilepticus, as an acute toxic process exactly parallel with acute uraemia and eclampsia, and causing acute fatty changes in the heart muscle and death from cardiac failure and often associated with hyperpyrexia, the classic treatment does not seem to me adapted to lower the heavy mortality. In an experience of a large number of cases I have come to rely upon morphine as by far the best and most rapid means of checking the convulsion. I avoid bromide, chloral, and all depressing remedies, and consider that early and careful feeding by nasal tube with easily absorbable and stimulant food, and in severe cases also alcohol, is far the most likely method of treatment to keep the patient alive and to prevent that exhaustion with cardiac failure which ushers in the end. The hyperpyrexia when it occurs should be controlled by immersion, which often requires to be prolonged.

GENERAL DISCUSSION.

Dr. ALDREN TURNER (London) said that the Section had listened to an interesting dissertation in support of the view that epilepsy was a metabolic dyscrasia, although it was admitted that the evidence of the altered condition of the blood and fluids of the body in epilepsy was not strong, and that this view of the disease was largely hypothetical. Some types of epilepsy, however, would appear to come under this definition. Reference had been made to what was known as "serial" epilepsy and the status epilepticus as being in all probability attributable to a toxic agency, although it did not wholly explain the well known fact that a common cause of the status was the sudden stoppage of a long-continued course of bromide medication. Other likely types of epilepsy of metabolic origin were those which developed during or within a brief interval of the exanthemata or other infective disorders. Here they had the basis of a true dyscrasia, and to these might be added the epilepsies arising during pregnancy and lactation, and also those developing out of a puerperal eclampsia. There had been an attempt made to associate the origin of epilepsy with disordered endocrine function, but Dr. Aldren Turner was sceptical about this relationship. It was not unusual to find enlargement of the thyroid gland in young women with epilepsy during early adolescence, but such enlargement was often an entirely normal and physiological condition, while thyroid deficiency had its own "symptomatology," in which epilepsy was rare. The relation between epilepsy and tumour of the pituitary body was not uncommon, but it was not clear whether the epilepsy was related directly to the pituitary lesion as such. In a case recently observed, the *x*-ray photograph of the skull showed an elongated and rather shallow pituitary fossa, but there was evidence that this alteration was secondary to an old internal hydrocephalus, which appeared to be the more likely contributory cause of the later epilepsy. Attempts had been made also to associate the parathyroids with epilepsy, but the whole subject of the influence of endocrine function—normal and abnormal—required fuller investigation in its relation to the disease.

Dr. Collier had referred to the theory of anaphylactic shock as a cause of epilepsy in some cases. There was evidence that a small group of epilepsies might be of this nature, and he submitted that the undoubted value of the purine-free diet occasionally in epilepsy might be explained on this hypothesis. This variety of epilepsy might have some relation to migraine (a not uncommon association), to the asthmatic type of person, and to an idiosyncrasy to certain food substances exhibited by some epileptics. Dr. Aldren Turner's attitude towards the disease was that epilepsy was a morbid state, characterized by periodic reactions of a very striking kind, termed "epileptic fits," and tending in the vast majority of cases, as the years passed, towards chronicity and the development of some degree of mental failure and enfeeblement. If they accepted the view that the reaction, of which the essential clinical feature was a sudden and temporary loss of consciousness, was the criterion of epilepsy, they had next to ascertain what was the underlying predisposition or constitution which made these reactions possible, and here they were up against the whole problem of epilepsy. All recent work on this disease had tended to reduce the number of cases which had been classified heretofore as "idiopathic epilepsy," and had placed them in either the organic, the toxi-infective, the psychogenic, or the temperamental group.

There was little difference of opinion as to the organic basis of many epilepsies; indeed, some writers went so far as to say that it was impossible to classify epilepsy as a neurosis in view of its chronicity, its severity, the variety of its symptoms in both the somatic and psychical spheres, and the evidence of anatomical changes found in the brains of many epileptics. It was scarcely necessary to do more than mention there the not infrequent occurrence of epileptic reactions in cases of cerebral tumour, cerebral vascular disease, cerebral trauma, and the hemiplegias of infancy and early childhood. The toxi-infective group was quite well known, and would, he suspected, be included in what Dr. Collier had described as epilepsy whose foundation was a metabolic dyscrasia.

To his mind there could be no doubt about the existence of a group having a psychogenic origin. It was well known that emotional shock might lead to attacks in no respect differing from those of the so-called genuine epilepsy, and it had been contended that the psychogenic origin of a seizure should not be ignored because in the fit the patient had bitten his tongue or had been incontinent. In a young woman recently under treatment in the hospital at Queen Square, the relation between emotional upset and recurring seizures, having the features which they associated with genuine epilepsy, was most marked, for on two separate occasions, in consequence of a severe fright, she developed epileptic attacks of considerable frequency, which gradually passed away. The patient, who was of poor mental development, presented a temporary functional paraplegia during the course of treatment in the hospital. Another patient, a young Jewess of nervous and excitable temperament, was admitted for a motor disability having the clinical characters of hysterical astasia-abasia. She gave a history of having had a fit shortly before admission. When under treatment in the hospital she had two seizures during sleep, the clinical features being those of a minor form of epilepsy, and in one of these she wetted the bed. It was difficult, therefore, to get away from the belief that there was a group of emotional epilepsies in which the reactions conformed to those of which the features were associated with epilepsy, but which were of psychogenic origin. It was also well recognized that individual seizures might arise from emotional stress, mental conflict, worry, and anxiety in patients with established epilepsy.

It was impossible to read the elaborate thesis of Pierce Clark "On clinical studies in epilepsy" without concluding that there was a temperamental basis of the disease in many epileptics, in whom the reactions were an expression of an inherent defect of the personality. In consequence of this constitutional defect the epileptic was incapable of social adaptation in a normal way. When the adaptations of puberty and adolescence had to be met, the temperamental deficiencies were such that failure occurred and the fits were the direct outcome of the inability to subordinate individualistic tendencies to social demands. But it should be remembered that the fit itself might be the stumbling-block to satisfactory adaptation, and a contributory cause of the mental and emotional failure. Dr. Aldren Turner had known quite a number of young people who before the development of their epilepsy had been regarded as entirely normal, but who, owing to the occasional occurrence of a fit, and probably also to some extent to the advice given them about restricting their occupation, pleasures, and recreations, had developed the belief that they were abnormal, had become sensitive to criticism, and, as time passed, had tended towards asocial habits. One could not help feeling that the fit reactions played a larger part in the development of the epileptic outlook than was sometimes recognized. On the other hand, they knew that the prevention or postponement of a fit was not always desirable. In some instances it was so definitely a reaction to a difficult situation, which the patient was unable to meet

normally, that its occurrence cleared the air, so to speak, and a feeling of relief was experienced. But even if they accepted all this teaching there still remained the mystery of the epileptic fit. What was it that could bring about a seizure, which in its most striking features had appealed to popular imagination throughout the ages by the startling picture of its clinical manifestations? They might recall the numerous theories which had been advanced from time to time—inhibition, vaso-constriction, cerebral anaemia, and so on. A most interesting observation in this connexion to his mind was the sudden extreme drop in the systolic arterial pressure which had been noticed at the onset of the major epileptic fit, but even here there was uncertainty as to whether the fall in blood pressure was the cause or the effect of the oncoming fit. Whatever might be the immediate and direct cause of the fit, the loss of consciousness and the tonic phase of the major seizure were regarded as comparable to a sudden temporary decerebration with liberation of a lower motor mechanism from cortical control, while the clonic stage was due to the return of cortical activity. But here again the evidence was speculative and the view expressed largely hypothetical. Whatever might be the cause or the mechanism of the epileptic reaction as such, two observations upon the disease were well established. The first was that the fit, of whatever type it might be, tended to the expression of some transient mental confusion and interference with memory, or gave rise to a psychical state characterized by automatic action; and the second was that the recurrence of such reactions over long periods of time eventually brought about some blunting of the mental faculties and permanent mental enfeeblement.

There could be no doubt, therefore, that established epilepsy was a disease having its roots deep down in the nervous and mental make-up. The temperamental and constitutional basis of the disease was mainly inherited, while chronicity and a tendency to mental enfeeblement were essential attributes.

Dr. TYLOR FOX (Lingfield Colony) spoke about the use of luminal in epilepsy. In his experience the drug was not without its drawbacks, even in small doses, and it was very rarely that he gave more than two grains a day. He had seen, even with these doses, rather frightening scarlatiniform and morbilliform rashes, and had received complaints of depression and dazed feelings from patients. He wished he could confirm the experience of the opener of this discussion that luminal did not lose its effect with prolonged administration. He had a great many "fit charts" which showed only too clearly that it was during the first two or three months of giving luminal that the most favourable results were obtained. Unless the dose was increased the drug subsequently became less effective and its action erratic; in some cases it was useless, but in a larger number it caused a marked decrease of fits. In a minority of cases, and those, curiously enough, often old-standing confirmed epileptics, the results were brilliant. He had not been able to satisfy himself that these groups had any features in common that would enable one to pick out the cases most likely to be improved with luminal. It was necessary to experiment with each individual case, and to compare the results with those of bromide treatment. There were three warnings worth mentioning about luminal:

1. The dosage should be kept small, or the drug would share the disrepute that bromide had in certain quarters. This was especially important in view of his second warning, which was—

2. To be careful of stopping luminal treatment suddenly. A marked increase of fits would almost certainly result.

3. To remember that, although in small doses luminal was a safe and almost innocuous drug, it was dangerous in large amounts. Consequently, patients should have only a week's supply at a time. Within the last week a patient had come to Lingfield Colony with two or three hundred 1½ grain luminal tablets in an unlabelled bottle in his pocket, his accumulated reserve from a few months' treatment at a clinic.

Dr. Collier had interested all very much by his theory of a metabolic dyscrasia as the basis of epilepsy. Time did not allow the discussion of this theory in any detail, but Dr. Fox had a very clear impression that in the theory due allowance had not been made for the enormous importance of mental and emotional factors. In the actual causation of the disease, in the first instance, Dr. Collier had himself suggested in his paper that many of the traumatic epilepsies were due to fright at the time of trauma, rather than to the physical effects of the trauma itself. It seemed doubtful if psychic trauma as a cause of fits harmonized with the theory of a metabolic dyscrasia better than physical trauma. But it was in the determination of fits in those who were already epileptics that the emotional factor became so clearly apparent to those who lived in close contact with them. When things were going well, on days of pleasurable excitement and new experience, the fits were few; when the environment was distasteful or the patients were bored, or, still more, if they were worried or anxious, the fits were numerous. In many cases there was a very simple and obvious correlation between pleasant and unpleasant environmental factors, and the absence or presence of attacks. This fact might perhaps be fitted into the metabolic theory by claiming that they now knew that emotions may give rise to marked and sometimes measurable metabolic effects. This might be true, but it appeared that the emotion factor was of primary importance in treatment.

Dr. Fox was not clear that, with their present knowledge, the adoption of the metabolic theory had had any effect upon treatment. Medicinal treatment by luminal and bromide still held the field, with general hygiene and occupation as adjuvants. But considerations of environment should, he thought, take a prominent place. All were familiar, probably, with the picture of the epileptic temperament that Pierce Clark and others had drawn. The egocentricity, the hypersensitiveness, the resulting inability to adapt himself to the changing situations of life, were often pretty obvious in the epileptic patient, but by no means always present. Pierce Clark claimed that they were in evidence before the fits commenced, and indeed actually led directly up to the attacks, which were reactions away from an intolerable environment. This theory seemed to many of them fantastic, and was certainly not applicable to epileptics generally. Dr. Fox ventured to suggest that the origin of the epileptic temperament might be looked for elsewhere. Such a temperament might be the direct result of the patient being forced to live in ordinary society. One could picture the life and surroundings of a child liable to epileptic fits. He was excluded from much that his fellows shared—from Sunday school, from entertainments, perhaps from school. They had ample evidence that he was almost always unpopular, being viewed by his companions with suspicion, fear, and often dislike. If his parents were careful people he would find that he was constantly being watched to avoid accidents, and might not be allowed out alone. Misjudged sympathy on account of his complaint and on account of these limitations to his activities too often led to the patient getting his own way at home. He discovered that violent tempers did not bring punishment in his case, and the discovery was disastrous for him. Thus he was continually being reminded that he was not as other boys, that he could not do as others did, but that many of the ordinary penalties of life did not apply to him, and that for him and for him alone bad temper, obstinacy, and crying were short cuts to the attainment of desire. Could there be a more effective way of producing those very characteristics—egocentricity, hypersensitiveness, and consequent unusual and asocial conduct—that they associated with epilepsy? Could there be a more effective way of making his life unhappy and therefore of encouraging fits and thus creating a vicious circle? Herein lay, Dr. Fox believed, the case for colony treatment, for in a colony the epileptic child saw himself as a normal member of the community in which he lived. There were no activities open to the others that were not open to him; he received no special consideration, and was subjected to no special limitations. He was happier, and therefore he was better, and for this reason over 20 per cent. of children at Lingfield lost their fits. Hygiene, dietary, and medicine might help, but the mental effect of an environment in which the patient was not regarded as abnormal was the most important

factor. If this was true it followed naturally that institutional treatment was most likely to be of value if started early, and Dr. Fox therefore concluded by pleading for more residential schools for epileptic children, especially in the early stages of the disease. Adequate treatment, at any rate for the great majority of epileptics, meant treatment away from home, and usually with other epileptics. Moreover—and this point would appeal to all those who were parents—he thought that it was very rarely fair to the other children for the epileptic brother or sister to live at home.

Dr. ALAN MCDOUGALL (David Lewis Colony, Cheshire) said that in setting out to treat a patient who had developed epilepsy the foremost consideration should be that in most cases the fits would persist throughout life. The physician should endeavour to prevent the patient from acquiring those unpleasant characteristics usually found in the chronic epileptic. Such characteristics were less the result of the epilepsy than of the treatment of epilepsy; colony patients lost them. Every child developing epilepsy should be removed immediately to a residential epileptic school. The sight of another patient in the colony having a fit did not render an epileptic any more likely to have a seizure himself. Familiarity with the sight of fits rather encouraged the epileptic—who is unconscious during fits—to consider himself much less afflicted than his neighbours.

Dr. STANFORD READ (London), in dealing with psychogenic aspects of epilepsy, said that their conception of epilepsy had been narrowed for three reasons. First, because they had mainly looked upon it as a disease entity instead of a symptom and end-result of some morbid process. Secondly, because the phenomena of the convulsion itself had been mainly the centre of interest, with consequent neglect of the study of the individual in the interparoxysmal period. Thirdly, because until lately the possibility of a psychic factor had not been adequately taken into account. It seemed to him that if they modified and extended their line of research, they might reform their conception of epilepsy on lines which would be more fruitful. Though they distinguished symptomatic epilepsy from so-called idiopathic epilepsy, they knew that this latter term was purely a cloak for their ignorance, and that the condition must be symptomatic only in so far as the pathological basis was obscure or unknown. They knew that a multiplicity of causes might originate a similar convulsive attack, so that they should speak of "the epilepsies" rather than of "epilepsy." Whatever morbid process might be present, it was evident that the resulting symptom evinced itself through the central nervous system. If they looked upon the nervous system in a simple way as a mass of interrelated reflexes with any number of incoming stimuli and correspondingly manifold outward activities, they could see, as White and Jelliffe had pointed out, that a "healthy organism is able, by reason of its nervous mechanism, so to distribute the energy received as to bring about a series of harmoniously adjusted activities." If hand in hand with such a conception they viewed their nervous system as having certain evolutionary levels—physico-chemical, physiological, and psychological—they might well surmise that at any of them there might be, through disease, some block in energy distribution and discharge, with resulting pent-up tension, which finally, like an avalanche, found its outlet in a convulsive attack. It was true that in the psychological sphere they could give no adequate explanation why the organism should adopt this particular form of discharge, for other methods of sudden outlet were recognized as a result of accumulation of affective tension. They had here to adopt the unsatisfactory device of hypothecating some special predisposition. It helped them to some extent out of their difficulty if they adopted Carver's view that in the epileptic syndrome there were always many factors—physiological, anatomical, and psychological—and so, supposing the last named to be the level at which the main lesion existed, there would be coexisting abnormalities elsewhere, however slight, which would supposedly determine this particular reaction. Many psychopathologists would therefore base the pathology of some epileptic attacks upon the theory of mental conflict with consequent repression, dissociation, and later periodic energic explosions. Apart from Jacksonian epilepsy, the study of the fit itself, notwithstanding the simple rules still laid down in textbooks, could not with any certainty distinguish for them the fit due to organic disease and that due to psychogenic causes. During the late war this had been certainly clinically demonstrated. Hurst concluded from his experience "that the vast majority, if not all, cases of war epilepsy which have arisen during the war with men who never had fits before, are functional."

This led them, then, to the importance of investigating the patient himself apart from the seizure, and they had ample evidence that in the majority of cases, if not in all, there was a psychic imbalance of a special nature, and the tendency of an epileptic to fugues, automatisms, and psychotic symptoms confirmed this. That this abnormal psychic element was secondary and something apart from the disease itself could not be accepted for a moment. Every neurologist was conversant with the painstaking work of Pierce Clark, who looked upon the epileptic fit as a psycho-biological reaction which acted as a refuge from an intolerable adjustment demand, and also constituted a regression to a pleasurable primitive state. It was often not realized sufficiently that the epochs of special physiological stress which might be provocative of epilepsy were also commonly periods of psychic stress, and that this latter might be of greater import. Those who were untrained in psychological methods would, in taking a case-history, probably elicit no such element and therefore deny its existence, or, if it was noted, the relation of cause and effect was not given its correct value. Though it was recognized that many of their war epileptics became so mainly from psychogenic causes, there had been little intensive study of the mechanisms at play. Some analytic investigations had been published by Sadger and Stekel, the latter stating that he had had excellent therapeutic results. Stekel saw in the epileptic a strong criminality which his consciousness rejected as unbearable. Many of the war cases he would trace to the development of all the wild instincts which active service naturally tended to bring about. The relation of violence and criminality to epilepsy was interesting, and Sullivan of Broadmoor pointed out that epileptic crimes were essentially those of violence and homicide. These facts were brought forward as further evidence of a psychic instability which had in all probability an intimate relationship with the factors productive of much epilepsy. In this connexion they should bear in mind certain anomalous conditions, such as the psychasthenic convulsions of Oppenheim, narcolepsy, and certain types of petit mal, where an undoubted psychic element often entered. In a case of petit mal recently treated, Dr. Stanford Read found that the unconscious attacks were always stimulated by some idea unpleasant to the conscious personality. They, indeed, seemed to constitute a refuge from reality. There was no time to give much illustrative case material, but he spoke of one recently under his care. A lady, aged 34 years, was sent to him for examination and report, having had epileptic fits regularly every month for four years. Her history was as follows: She had served as a nurse, doing strenuous work overseas during the war, returning to England in November, 1918. She was then quite well, and remained so until October, 1919, when, during the night, she had a nightmare, and was subsequently told that she had been making choking noises as if suffocating. She felt herself tired as if bruised, and found that she had wetted her bed and bitten her tongue; in subsequent attacks she sometimes defaecated. In hospital she felt quite well, but fits recurred which were pronounced to be true epilepsy by two medical officers who had witnessed them. Ever since then she had had attacks once a month, but except for some delayed sleep in the intervals she felt quite well. On inquiry further points were elicited. The fits always occurred when in bed at night. They appeared either just before or just after the menstrual period, and were accompanied by special dreams which were sometimes of the anxiety type. The nightmare which she had the same night as the initial fit was of being raped by

a German; in fact, it was a partial replica of an actual experience she had gone through about fifteen months previously. On the evening before this dream she had been discussing German atrocities with friends. Still further investigation revealed another source of mental stress and conflict. She had always been specially attached to her father—the more so since her mother died when the patient was 13 years old—but in later years his affection for her seemed to wane, and, on hearing that he was going to remarry, she left home secretly, feeling great resentment against her father and against the woman who was going to supplant her. She had not seen or heard from her father since. With such a history one was justified in thinking that emotional conflict might have much if not everything to do with her convulsive attacks, though they were pronounced to be of a true epileptic character. Psychotherapy had so far confirmed the supposition; the fits soon became less and altered somewhat in character, and none had now appeared for over seven months. Specially interesting dreams, however, have more than once seemed to have been equivalents. It was not Dr. Stanford Read's intention to make wide-sweeping and dogmatic conclusions from such a case, but he considered that he was well within his rights scientifically when he suggested that if more cases of epilepsy to which no patent organic cause could be assigned were investigated psychologically, there would be more often found emotional conflicts which might be the main pathological factor, or at any rate so full of stress that their removal would materially relieve tension and so tend to lessen the necessity for sudden neural discharge. They must look upon the individual as an integrated organism, and where pathology was obscure no avenue of approach should be neglected.

Dr. D. N. HARDCASTLE (London) said that if they adopted the theory of cause and effect, then the manifestations of epilepsy must be regarded as a response to either an intrinsic or an extrinsic stimulus, the incidence being inversely proportional to the stability of the individual. This led to the consideration of (1) the reaction; (2) the individual predisposing factor; (3) the stimulus.

(1) The essential reaction lay in a complete break in the continuity of consciousness. This might represent the entire reaction, as in petit mal. It might be followed by a generalized tonic muscular contraction of short duration giving place to clonic contractions (grand mal), or there might be psychic manifestations (epileptic equivalents, autonomic states, etc.). The late Dr. Rivers, in his book *Instinct and Unconscious*, had endeavoured to show that consciousness was a late phylogenetic development superimposed on the primitive unconscious, blending with some aspects and repressing others, tending towards an integral whole. In the same manner Dr. Head and his colleagues had demonstrated the more recently developed epicritic sensation, with cortical differentiation, superimposed upon the older protopathic sensation with thalamic affective value. In the same way also the motor response, capable of infinite variation, dependent on cortical development, was superimposed upon the older thalamic and spinal reflexes of mass reaction type. Further, they knew that there was a definite link between epicritic sensation and the cortex, likewise consciousness was dependent upon the integrity of the greater part of the cortex. From this they gathered that there must be a close intimacy between sensation and consciousness; and he maintained that consciousness was as much dependent on the existence and integrity of intrinsic and extrinsic receptors as was any motor activity. Tredgold gave sense deprivation as one of the causes of mental deficiency. This essential break in the continuity of consciousness might be looked upon as a regression to this pre-psychological instinctive level: (*a*) Petit mal, a condition in which that was the entire reaction and a return was made to consciousness at the same level at which it was broken. (*b*) Grand mal, where the break was of sufficient duration to allow of a motor response which was an undifferentiated protopathic reaction at the thalamic or spinal levels. (A similar condition could be artificially produced by continued nociceptive stimulus to the decerebrate frog.) (*c*) Epileptic automatism and other psychic manifestations, in which the break in the continuity of consciousness again occurred but a return was made at a lower dissociated level, which was really a return to a more primitive form of conscious reaction in accordance with the ontogenetic recapitulation of the phylogenetic development. The "aura" might be regarded as a projection or extension of sensation in the endeavour not to lose consciousness. From this rough sketch of the epileptic reaction it would appear that the cleavage occurred at the junction of the physiological and psychological levels, and that the reaction might be expected in individuals where the superstructure, which might be designated by the term "epicritic," had not been firmly established and integrated with lower instinctive levels. To compare epilepsy with hysteria, one saw that in epilepsy the loss of consciousness was absolute, while in hysteria it might be recalled under hypnosis. The motor activities were "purposeless" in epilepsy, while in hysteria some meaning might be read into them by one who was intimately conversant with the psychological make-up of the individual. In the autonomic states, except for the initial regression to the pre-psychological level, there was little difference; the epileptic returned again to the early fixation point, while the hysteric only regressed to this point. In the epileptic, however, the fixation points tended to be of the earlier narcissistic type, while the hysterics were of a later variety.

(2) As much had been written on the epileptic personality, he would give only a very rough outline of the principal points. (*a*) Family history. This might not show epileptic traits in more than about 30 per cent., but it would almost always reveal some neurotic or frankly mentally defective ones. Tredgold had advanced the theory that epilepsy and the psychoneuroses were the manifestations of a functional mental defect before there were any signs of gross cerebral deficiency. From his data Burr concluded that the effect of heredity was rarely direct; it was usually indirect—general, not specific. A predisposition to nervous or mental disease was inherited, the resulting specific disease depending on external causes—it was environmental in the broadest sense of the word. (*b*) Conduct. The essential characteristics of the epileptic were marked from the earliest age. The baby or child had attacks of meaningless uncontrollable screaming, was asocial and refused to co-operate in childish play, responded badly to discipline, and resorted to "tantrums" as a solution of many early difficulties. Adolescence was a difficult period for the potential epileptic, and he often failed to meet the demand for new adaptations which it entailed, and they found the epileptic characteristics appearing perhaps for the first time at this important juncture in the individual's history. They noticed—restriction of ideas and narrowing of the field of interest concentric to the patient, stereotyped vocabulary and mode of expression, periodic alteration of behaviour and mood, taciturnity and withdrawal into self, alternating with over-friendliness and desire for company, and a gradual reduction of intellectual capacity progressing towards dementia. The sex characteristics of the epileptic were worthy of note. Sex desires tended to be stronger and more imperious and to overflow the normal outlet—perverse activities, masturbation, and other auto-erotic activities; these bore a close relation to the fit and might occur in crises as equivalents for the attack. When intellectual impairment had advanced to a degree which in other conditions still allowed of normal sex life, the epileptic was auto-erotic. Jung, in his association reaction tests on epileptics, found that they approximated in many ways to imbeciles; there was a considerable delay in response, frequent repetition of the stimulus word, perseveration of ideas, and the reactions were more often intrinsic than extrinsic. Scripture had remarked on the emotionless monotony of the epileptic voice.

(3) Stimulus. If a nociceptive stimulus was applied to a limb of a decerebrate frog it would produce a spinal reflex movement designed to remove the limb from the irritation; if the stimulus was continually repeated it would be seen that the reflex tended to become more diffuse and less localized to the stimulated limb, until finally there was an undifferentiated mass reaction involving all the levels of the cord. It might be concluded that this reaction was a last and final response to free the organism from this persistent stimulus which threatened its integrity. With this as an

example of an organic stimulus in the decerebrate organism they might then turn to the psychological stimulus in the epileptic and look for a parallel. If they investigated the psychic life of the epileptic, many examples would be found. Dr. Hardcastle quoted a case cited by Pierce Clark of a boy who stole some fruit; on being reprimanded and ordered to make reparation he became completely introverted and took refuge in a fit from the difficulties he could not bring himself to face—a simple situation in itself to the normal individual, but to the egocentric narcissist who had not succeeded in integrating himself with his environment a very difficult problem, and one which could not be solved except by shattering his "complete narcissistic entity"; this could not be done and so a fit was the solution. With these two examples of the pure organic and the pure psychic causes, he considered the other causes of chemical, toxic, and organic changes could be looked upon as intermediate in their action. A diminution of cortical activity and power to accommodate to an environment of increasing difficulty would be sufficient to bring about an epileptic response in certain predisposed persons, whose stability would otherwise pass as normal. It was necessary to try to bring into line the traumatic group, head wounds in particular. In a recent issue of the *Journal of Neurology and Psychopathology*, Aldren Turner in making an analysis of gunshot wounds of the head found two types of fit resulting—focal epilepsy coming on within a short time of the initial injury, and generalized epilepsy coming on at a later period. In the second group he found operative treatment of little avail and that a large percentage had a neurotic family history. These must have been potential epileptics whose stability had been broken down by injury, and Dr. Hardcastle thought the same condition would undoubtedly apply to the other organic conditions of the cortex which produced fits, as it certainly was his experience that not every case of general paralysis of the insane, arteriosclerosis, etc., developed fits, but only a small percentage.

As regards the treatment of epilepsy, Pierce Clark (*Brain*, vol. 43) had insisted upon a line of treatment which was based upon as full a knowledge of the patient's life and environment as possible. Colony treatment, if contemplated, should be started as early as possible and not left to be a last resort when mental deficiency had developed. Treatment must be based upon their knowledge of the fit, its meaning and cause; the earlier it could be undertaken the greater the hope of recovery. He felt that it should begin before the fits appeared or were firmly established. The child whose family showed neuropathic tendencies, who was difficult from the first, having bouts of unprovoked screaming and perhaps infantile convulsions, and, later, was not sociable, refusing to take his part in childish games, etc., should most certainly be looked upon as a potential epileptic. The problem that lay before them was to promote sublimation, leading the child's interest away from itself on to its surroundings, endeavouring to get its consciousness integrated with its environment, changing its attitude of aloofness to one of intimacy. If this could not be accomplished the environment must be modified until this had been done, and then by gradual hardening of the environmental conditions the child should return to the conditions of everyday life. If fits had occurred then difficulties would tend to be met with fits rather than with an attempt at adaptation; this would necessitate an environment devoid of difficulties, and, from this point, a very gradual stepping up of the environmental stress until some form of adaptation had materialized. Wiersma maintained much the same idea when he advocated the giving of bromide, which, he said, increased the power of imperception, thus keeping the patient in touch with reality. More recently, some psychologists had approached the problem of epilepsy from the Freudian aspect and had obtained some most useful information, by means of psycho-analytic technique, for dealing with these patients. Pierce Clark in his writings on the epileptic had shown by the use of this technique, modified at times to suit the occasion and the patient, that difficulties could be revealed and overcome, whereby environmenal adaptation was facilitated. Rank, at the last International Psycho-Analytic Congress, stressed the importance of the birth trauma as a causative factor in the psychoneuroses, and also alluded to an abbreviated psycho-analytic technique in dealing with this early fixation. It was at this ontogenetic epoch that their interest was specially centred, for it was at birth that the great change in sensation took place which was responsible for the development of consciousness. He felt very strongly that should the claims of Rank materialize another therapeutic measure of great value would be added to their armamenta.

Dr. WORSTER-DROUGHT (London) stated that so far as "idiopathic" epilepsy was concerned he agreed with Dr. Collier that the probable basis of the condition was some form of constitutional metabolic disturbance. Other factors not previously mentioned that also suggested this view were the frequent presence of a positive Widal haemoclasic test for hepatic insufficiency, and the "dysregulatio ammoniaci" of Danish observers, demonstrated by means of daily determinations of the ammonia-nitrogen and hydrogen-ion content of the urine. It was to be remembered, however, that Bratz had described sclerosis of the cornu Ammonis in 50 per cent. of epileptics, thus confirming Meynert's original observation, although, if accepted, it was quite possible that such sclerosis was an effect of metabolic disturbance rather than a cause of epilepsy.

With regard to the theory that the epileptic state was a form of idiosyncrasy to some or other protein substance normally present in food, and that the seizure was consequently an anaphylactic manifestation, Dr. Worster-Drought had little belief in such a conception. In conjunction with Dr. Hardcastle, he had carried out a series of cutaneous reactions with extracts of the common foodstuffs—various meats, fish, poultry, cereals, vegetables, and beverages. Forty cases of epilepsy were each tested with the entire series of food extracts. In not a single case could a definitely positive result be claimed; quite often, indeed, the control fluid yielded the largest wheal. Two patients only gave a doubtful positive reaction—one to white fish and another to mutton. The exclusion of these substances from their respective diets made no difference in the average frequency of the epileptic attacks. It had been thought that epileptics suffering from some digestive disturbance were more likely to show a food-substance idiosyncrasy than others; among the forty cases tested, at least eight complained of dyspeptic symptoms and they showed equally negative reactions. It was true that the actual intensity of the cutaneous reaction varied in different patients, but this was entirely due to the fact that those individuals with some degree of vasomotor instability exhibited a more pronounced reaction—even to the extent of "dermatographism" in some—to slight cutaneous traumata.

Dr. Collier's experience—that he had never seen a case of traumatic epilepsy benefited by operation—surprised him (Dr. Worster-Drought), since he had met with several patients not only benefited but apparently cured by operation. He cited, as examples, two cases which he had been able to keep under observation:

Case 1.—W. A., aged 25, while a prisoner of war in the hands of the Germans, was struck on the head with the butt-end of a rifle in February, 1917, and rendered unconscious for four or five hours. About a week later he had a fit, there being no previous history of epilepsy. The fits recurred at intervals varying from one to eight weeks. He was repatriated in December, 1918, and came under Dr. Worster-Drought's care. The seizures were then both nocturnal and diurnal; there was no aura and the patient had bitten his tongue and defaecated during the attacks. A typical epileptic seizure, accompanied by stertor, cyanosis, and frothing, was personally observed. Physical examination revealed no abnormality beyond a small scar and a subjacent slight depression in the bone of the right posterior parietal region, 1 inch to the right of the mid-line and 2 inches posterior to the bregma. X-ray examination showed a slight prominence of the inner table in the region mentioned. In March, 1919, Mr. Cecil Rowntree trephined and removed the piece of skull containing the depression. The dura, which appeared to be thickened posteriorly, could not be seen to pulsate although slight pulsation could be felt. Immediately on incising the dura there escaped about two drachms of yellow serous fluid, and a saucer-like depression (which had apparently contained the fluid) was seen in the cerebral cortex. Dr. Worster-Drought had had this case under observation since the operation—over five years—and no further fits had occurred.

Case 2.—A. H. N., aged 28, received a blow during a quarrel and fell, striking his head on the junction of two tram-lines. Following

this he was more or less unconscious for about eight days, and made an apparent though slow recovery. In February, 1922—three years after the accident—his first attack occurred, there being no previous history of epilepsy. At first the fits were entirely nocturnal, and recurred in groups of from two to six. Before January, 1922, however, they had also occurred during the daytime, had become more frequent and severe, and at times were followed by "furor." There was usually no warning of the attack, but occasionally a visual aura in the form of coloured revolving lights had occurred. During the attack the patient had frequently bitten his tongue (scars visible), urinated, and bruised himself in falling. Physical examination showed a scar in the occipital region, 1 inch to the right of the mid-line and 1¼ inches above the inion. Beyond nystagmoid jerkings on lateral deviation of the eyes to the right, and some nerve-deafness of the right ear, there were no further physical signs. X rays revealed nothing of a definite nature.

In February, 1922, Sir Charles Ballance trephined the region of the scar. When the piece of bone was removed, the dura was seen to be under tension and at once bulged into the opening; on incision the dura was found to be adherent to the underlying cortex. The trephine opening was enlarged transversely and the piece of dura was removed. Following the operation the patient was subacutely maniacal for eight days, but afterwards made a good recovery. Dr. Worster-Drought had had him under observation since that time—two and a half years—and no fit whatever had occurred. He had returned to work and was in excellent health.

With regard to the treatment of "idiopathic" epilepsy, Dr. Worster-Drought, in conjunction with Dr. H. C. Beccle, had analysed the results of different forms of treatment in eighty cases attending the West End Hospital for Nervous Diseases.

1. Simple bromide (sodium or potassium bromide, 10 to 15 grains thrice daily): of 10 cases treated, 1 showed great improvement, 5 moderate improvement, 3 were unaffected, and 1 became worse.
2. Sodium bromide (15 grains) with borax (7 grains) and liquor arsenicalis (3 to 4 minims): of 17 cases treated, all showed improvement in diminished frequency and severity of the attacks. In 6 cases the benefit was remarkable: one case, in which attacks had occurred with an average frequency of four a month, experienced only five attacks over a period of two and a half years.
3. Colloidal palladium (pallamine), 1 c.cm. injected intravenously twice weekly, twelve to twenty-four injections constituting a course: of 13 cases treated, 5 showed definite improvement, 2 slight improvement, while 6 were unaffected during the course of treatment.
4. Luminal, 1½ grains at night in nocturnal cases, morning in diurnal, and both night and morning when the fits occurred both day and night: of 20 cases treated, 17 showed definite improvement, while 3 deteriorated; of the cases that improved, in 4 the result was most striking, while in 1 case minor attacks replaced major.
5. Luminal (1½ grains) combined with sodium bromide (10 to 15 grains) and borax (5 to 7 grains): of 10 cases treated, in all excepting one the improvement was most pronounced. In 3 cases attacks had been entirely absent for over a year, and in another only occasional minor attacks have replaced frequent major attacks.
6. Dialacetin (1½ grains twice daily): of 9 cases treated, only one—a case of nocturnal epilepsy—had shown any improvement.

Dr. Worster-Drought considered the best medicinal treatment on which to start a given case of epilepsy was a mixture containing sodium bromide (15 grains), borax (7 grains), and liquor arsenicalis (3 minims) given morning and evening, and increasing to three times daily if necessary. If a satisfactory result was not then obtained, one of the diurnal doses of the mixture should be replaced by luminal (1½ grains). He agreed with Dr. Tylor Fox that the dosage of luminal should be small—not more than 1½ grains per dose nor more than 4½ grains per day; if luminal failed at this dosage, no better result could be expected from larger doses.

The President (Dr. GRAINGER STEWART) considered that the cause of epilepsy might eventually be found to concern the vegetative nervous system. He described a case of epilepsy in a patient of the vagotonic type, with greasy, blotchy skin and offensive sweating, in whom the administration of tincture of belladonna (20 minims thrice daily) led to a cessation of the fits and remarkable improvement in the general health. The available evidence rather tended to show that the vegetative nervous system might overact from either the sympathetic or the parasympathetic side.

Dr. W. A. POTTS (Birmingham) commented upon the fact that there seemed to be considerable unanimity of opinion that either psychological or institutional treatment at an early stage of the disease was very valuable. It was important, therefore, that one or other of these treatments should be arranged at the beginning, according to the circumstances of the case. As a rule in physical disorder, even where there was a large psychological element, it was generally better to carry out all the physical treatment first; psychological treatment, if then still necessary, might be given later. In epilepsy, however, psychological treatment should be instituted at once. Dr. Potts had seen several cases of epilepsy in which there was an important psychological basis; psychological treatment, however, failed, partly because the patient was not willing to submit to treatment sufficiently long, but still more because such a long period had elapsed since the onset of the disorder.

Dr. HILDRED CARLILL (London) drew attention to the danger rules which should be given to the relatives of an epileptic patient. There must be no locked lavatory or bathroom doors, no delay in crossing crowded streets, no swimming without careful precautions, no walking on the edge of platforms, etc. Epilepsy might not kill, but an attack in a place of danger might be fatal. Great care, he considered, was needed to make an accurate diagnosis. It was the family, not the doctor, who usually witnessed the attacks. In the crowded out-patient departments of London some patients at least spent a considerable portion of their lives labelled as epilepsy and saturated with "repeat" doses of bromide.

Dr. D. E. CORE (Manchester) raised the question of the frequency of death occurring in nocturnal epilepsy from the patient in the post-epileptic state turning over on to his face and being suffocated against the pillow.

Dr. SCHARFF (Singapore) expressed the view that institutional treatment caused a stigma to be applied to the patient, and that a better final result might be achieved at home. With 30 grains of bromide a day, he considered, the patient's health tended to deteriorate.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CONGENITAL SACRO-COCCYGEAL TUMOUR.

THE photograph reproduced herewith shows a child with a congenital cystic tumour of the sacro-coccygeal region. The child was born at full time of a multiparous woman, and was the second of twins. There were no obstetric complications; the presentation in this case was a breech, and a vertex in the case of the first child. The child was otherwise of normal development and weighed 5½ lb. at birth. The tumour had well defined edges, was fluctuant, and translucent to light. Rectal examination was negative. An *x*-ray photograph failed to reveal any abnormality in the vertebral column.

The tumour was readily removed by an elliptical incision around the base; a small degree of undercutting of the skin sufficed to appose the skin edges. The tumour had no deep connexions, and arose in the post-anal gut region. There were no complications and the child progressed satisfactorily.

A section of the cyst wall showed the presence in it of both striped and unstriped muscle tissue and also fibrous tissue. There was a mass of cartilage the size of a pea in one part of the wall. The lining was indefinite—probably obliterated by the pressure of the fluid contents, which were of a clear serous nature. The tumour was an unusually large sacral hygroma, most probably a meningocele which had been cut off *in utero* by the continued growth of the vertebral arch.

I am indebted to Mr. C. P. G. Wakeley for permission to publish this record.

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LARGE FIBROMYOMA OF UTERUS.

THE size of this tumour, its difficulty in diagnosis, and the complications met with at operation are sufficient to justify recording it.

The patient, a Yoruba woman, aged about 30, had had a miscarriage when three months pregnant, eight years before admission to hospital. She had had no pregnancy before or since that mishap, but had menstruated regularly for five days every month since that time. She dates the beginning of her tumour to the miscarriage, but the growth was not very noticeable until three or four years later, when there was some vaginal obstruction. This was treated by a native medicine man, who introduced so strong an irritant into the vagina that it was almost occluded, a probe passing only with difficulty. During the last four years growth had been regular and rapid until the condition shown in the first photograph (Fig. 1) was attained. The mass was freely movable above but attached below; it was dull to percussion, rather soft and boggy to the touch, and without fluctuation. No vaginal examination could be made. I diagnosed it as a large ovarian dermoid with semi-solid contents.

FIG. 1.

FIG. 2.

On August 19th she was given chloroform, and with the assistance of Dr. Clive Sharp and Dr. K. Faderin I removed a mass weighing 33 lb. To deliver this mass from the abdomen, which it appeared to fill completely, an incision was made from an inch below the costal margin to the pubes just to the left of the middle line. It was difficult to determine exactly what relations the tumour had, even when the abdomen was open; it appeared to arise in the right broad ligament. Having drawn the tumour forward it was found to have raised the peritoneum off the posterior wall of the abdomen, and the appendix and caecum were stretched out on its surface. In separating these there was considerable haemorrhage, and the right ureter, also stretched over the tumour, was caught in artery forceps and half divided before it was recognized. The artery forceps was retained until the ureter had been sutured.

After completing the removal of the tumour it was found that the uterus remained almost intact, the tumour having been attached to its right side and having pushed it into the pelvis. The tumour was a large fibromyoma, but much softer than usual and almost semi-fluid; there was no infection or necrobiotic change. A drain through a stab wound in the flank was left in down to the ureter; this was removed in forty-eight hours, and both wounds healed well. The stitches were taken out on the eighth day. The second photograph (Fig. 2) shows the condition three weeks after operation.

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RUPTURE OF VENTRICLE.

THE following case is of interest in connexion with others of the same nature that have recently been published in the BRITISH MEDICAL JOURNAL.

A man, aged 62, was walking along the street when he was suddenly seized by acute pain in the chest, which doubled him up. He fell down, and when he was reached by the bystanders he was already dead. The only history of illness that could be obtained was an account of prostatectomy two years previously, and also of "inflamed varicose veins."

The *post-mortem* examination showed a strong and well nourished body, with numerous moles. On opening the pericardium about 1/4 pint of fluid blood flowed out and a large clot surrounded the heart. The myocardium was pale and degenerate, and there was a large tear (about one-third of an inch) in the wall of the left ventricle. The mouth of the right coronary artery was blocked by a deposit of calcium, about a quarter of an inch thick, and confined to the upper half of the lumen. There were calcium deposits along the course of both coronary arteries and at the root of the aorta, which latter also showed atheromatous plaques along its whole length. There was excess of lymphoid tissue at the base of the tongue and in the tonsils, and the surfaces of the kidneys were rather granular; but this did not affect the parenchyma. Otherwise the findings were not abnormal for a man of this age.

Is it possible that a minute clot from the thrombosed varicose veins had lodged as an infarct in the already degenerated heart muscle and caused the fatality?

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London, W.

THREE SIMPLE DIET TABLES.

IN the JOURNAL of April 21st, 1923 (p. 679), was published a diet table which I had used in both hospital and private practice for nearly twelve months. Since then it has been revised and recast in the form printed below, and two other diets have been added. So many inquiries have been made for this dietary that I venture to regard the matter as one of general interest. The diets are weighed out with a Chatillon scale: as before, the quantities of protein, fat, and carbohydrate have been brought to the nearest convenient fraction.

1. DIET SCALE (*for making up any diet*).

One ounce (or 30 grams) carbohydrate or protein yields 120 calories.
One ounce (or 30 grams) fat yields 270 calories.
Proteins contain 16.5 per cent. nitrogen.

One ounce of carbohydrate is contained in—

1 oz. sugar.
1½ oz. wheat flour or grape nuts (contain 1/7 oz. protein).
1½ oz. dry oatmeal (contain 1/4 oz. protein, 1/10 oz. fat).
1 pint of milk (contain 2/3 oz. protein, 2/3 oz. fat).
1½ pints cream (contain 1 oz. protein, 6 oz. fat; rich cream contain 12 oz. fat).
5 oz. potatoes (contain 1/6 oz. protein).
3½ oz. butter beans (contain 1/3 oz. protein).
5 oz. boiled rice or macaroni.
1⅝ oz. bread or toast (contain 1/6 oz. protein).
1⅝ oz. marmalade.
10 oz. strawberries, onions, oranges, pineapple, gooseberries, and peaches.
6 oz. apples, currants, pears, cherries, parsnips, grapes, green peas, raspberries.
5 oz. plums, bananas, prunes, French beans, and marrow.
20 oz. grape fruit.
20 oz. ripe olives (contain 1/2 oz. protein, 4 oz. fat).
10 oz. Brazil nuts (contain 1½ oz. protein, 7 oz. fat).
10 oz. filbert nuts (contain 1 oz. protein, 7 oz. fat).
20 oz. tomatoes or radishes.
20 oz. lettuce (contain 1/2 oz. protein).
1 pint beer.
½ pint stout.
Thrice-cooked spinach, celery, and cabbage contain no carbohydrates; the carbohydrate in soya bean or mushrooms is not assimilated.

One ounce of protein is contained in—

10 oz. smoked uncooked bacon (contain 6 oz. fat).
6 oz. ordinary uncooked bacon or tripe (contain 3 oz. fat).
5 oz. lean smoked ham (contain 1 oz. fat).
5 oz. lean uncooked beef, mutton, or lamb (contain 1/2 oz. fat).
4 oz. roasted lean beef or leg of mutton (contain 1 oz. fat).
6½ oz. corned beef (contain 2 oz. fat).
5 oz. fresh fowl (contain 3/4 oz. fat).
5 oz. chicken, fresh grouse, partridge, or pheasant (contain 1/10 oz. fat).
5 oz. boiled cod, haddock, sole, or whiting.
5 oz. herring (contain 1/3 oz. fat) or salmon (contain 3/5 oz. fat).
6 oz. lobster or crabs.
16 oz. oysters contain 1/2 oz. carbohydrate).
7 average sardines (contain 1 oz. fat).
2 large or 3 small hen's eggs (contain 1 oz. fat).
4 oz. American, Cheddar, or Cheshire cheese (contain 1½ oz. fat).
12 Kalari biscuits (Callard) (contain 1/2 oz. fat).

One ounce of fat is contained in—

1½ oz. fresh butter.
1 oz. oleo margarine.
1 oz. lard, cod-liver oil, or olive oil.
One ounce of whisky, brandy, rum, or gin yields 105 calories.

2. TEST DIET A (*in bed: 1,787 calories*).

BREAKFAST.—2 thick slices of white bread, 1/2 oz. margarine, tea or coffee (without sugar), 1 oz. milk.
DINNER.—3 oz. roast beef or white fish, 2 medium-sized boiled potatoes, 3 oz. cabbage, 1 oz. cheese, 1/2 slice white bread.
TEA.—1 thick slice white bread, 1/2 oz. margarine, tea (without sugar).
SUPPER.—1 thick slice white bread, 1/2 oz. margarine, tea or coffee (without sugar), 1 hen's egg (large).
N value = 10 grams.

3. "CARBOHYDRATE FREE" DIET (*in bed: 1,600 calories*).

BREAKFAST.—2 oz. (weight uncooked) smoked bacon, 1/2 oz. margarine, 7 Kalari biscuits, 1/2 oz. cream, tea or coffee (without sugar).
DINNER.—3 oz. roast beef or white fish, 3 oz. cabbage, 7 Kalari biscuits, 1/2 oz. margarine, 1 oz. cheese.
TEA.—3 average sardines or 1 egg, 1/2 oz. margarine, 6 Kalari biscuits, tea or coffee (without sugar).
N value = 11.5 grams.

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Reviews.

BAYLISS'S "PRINCIPLES OF PHYSIOLOGY."

A TRAGIC interest attaches to the fourth edition of Sir WILLIAM BAYLISS's great textbook *Principles of General Physiology*,[1] which has just appeared. Sir William Bayliss during his last illness expressed anxiety at his inability to bring out a fresh edition of his textbook, and accordingly a group of friends undertook the revision of the work as a token of their affection and respect for the author. In the preface the hope was expressed that the next edition would be once again the work of the master, but Sir William Bayliss died whilst the present volume was still in the printer's hands, and his friends had not the satisfaction of presenting him with the completed work.

The task of revision was one of peculiar responsibility and difficulty, for the book occupies a unique position amongst textbooks of physiology. It expresses the personality of a great experimental philosopher, and gives a clear and comprehensive account of the fundamental problems of physiology. In particular these problems are treated as far as is possible from the standpoint of physical chemistry, and the appearance of this treatise ten years ago lent great assistance to the modern tendency to try and reduce physiology to a more or less exact science. Bayliss's textbook is in consequence one of that select number of works which can be said to have influenced definitely the development of a science.

The aim of the members of the committee of revision has been to do nothing to destroy the personal character of the work, but to limit their task to the incorporation of recent work of outstanding importance. As Professor A. V. HILL says in his preface, which was written before the author's death:

> "We have avoided in general any considerable interference with the text of the third edition; we have attempted rather to make only a few corrections of fact, necessary as the result of recent work, to refer shortly, and with little comment, to recent important papers, to bring the bibliography up to date, and to make it possible to assure Sir William Bayliss that the new edition contains nothing of fact, or theory, which he need hesitate to publish at the present time. We have not desired to modify the expression, which this book offers, of the personal opinions and outlook of the author—opinions and outlook which have been a considerable factor in determining the present state and the existing tendencies of physiology."

The volume was prepared under the general editorship of Professor A. V. Hill, who has himself revised the chapters on energetics, osmotic pressure, and contractile tissues. The last chapter called for considerable revision owing to the important recent discoveries regarding the thermodynamics of muscular contraction—discoveries in which A. V. Hill has taken the leading part.

The chapter on respiration has been revised by Mr. J. Barcroft, and much new information regarding the properties of haemoglobin has been incorporated. This work has come largely from the Cambridge school of physiology.

The chapter on oxidation and reduction has been revised by Professor J. C. Drummond, and a full account is given of Professor Gowland Hopkins's fundamental work on the properties and functions of glutathione. The rapid advance in our knowledge of vitamins has also necessitated important additions to the chapter on nutrition, which has also been revised by Professor Drummond.

Sir Thomas Lewis and Professor H. S. Gasser have revised the chapter on electrical changes in tissues, and a very clear account is given of the interpretation of the electro-cardiogram. Sir Thomas Lewis and Professor E. H. Starling are responsible for the revision of the section on the circulation of the blood, in which an account is given of the important new work on the function of capillaries.

Altogether twenty-three co-workers have been engaged on the work of revision, and the names mentioned above are sufficient to indicate that most of the chapters have been dealt with by persons who have themselves made important contributions to our knowledge of the subject. The book covers a vast range of knowledge, and it has been impossible to do more than indicate a few of the more outstanding contributions.

A survey of the volume as a whole shows that the contributors have fully succeeded in their task, in that they have brought the book completely up to date, but yet have not interfered with its general quality.

The death of Sir William Bayliss has been an irreplaceable loss to physiology, but we welcome this work of his friends in ensuring the preservation and survival of his great textbook. The fact that more than twenty distinguished scientists were required to revise the work written by a single author is perhaps the most striking testimony possible to the extraordinary breadth and depth of Sir William Bayliss's knowledge. The highest praise we can give to the present edition is to say that the work has not suffered by its revision, and with that praise we believe the contributors will be very well content.

[1] *Principles of General Physiology.* By Sir William Maddock Bayliss, M.A., D.Sc., F.R.S., etc. Fourth edition. London and New York: Longmans, Green and Co. 1924. (Roy. 8vo, pp. xxviii+882; 260 figures. 28s. net.)

DISEASES OF THE BREAST.

MR. DUNCAN FITZWILLIAMS has produced a very readable and clearly expressed book on diseases of the breast and their treatment.[2] A very great deal of literary research has gone to its making. How much work this entails only those know who have had experience of that laborious but illuminating task. Mr. Fitzwilliams has illustrated the clinical and pathological sides of the work by reference to his own experience and the St. Mary's Hospital material in general. He has also used the literature freely, so that his book becomes what is usually referred to as "a mine of information." There is a certain drawback to the printing of a great number of case histories—namely, that the ordinary reader does not always share fully the author's enthusiasm; cases which seem fascinating to the writer may only bore the reader. Nor is the latter commonly in a position to appreciate perfectly the small shades of difference which have won a place in pathological history for the particular cases reprinted. He is apt to begin to "skip" passages, and very likely will miss some portion which he should have read. These criticisms are levelled particularly against the portions dealing with malignant disease of the breast, and it is quite possible that other readers will react differently.

When Mr. Fitzwilliams does speak, and fortunately he "speaks quite a piece," he does it in no uncertain voice. He has an admirable style, perfectly clear and uninvolved, and brings to the matter a directness and simplicity of writing for which the reader must and will be grateful.

The first portion—and it is very considerable—is devoted to the anatomy and physiology of the breast, its abnormalities and so forth. These are made clear by a number of excellent illustrations borrowed from various writers. The subsequent chapters are arranged on the usual pathological basis, working through the various forms of inflammation on to cysts and to tumours.

Every writer on the diseases of the breast has his own classification of cysts and the various forms of adenoma. Mr. Fitzwilliams's accounts of these conditions are clearly expressed and logical. When we come to carcinoma we find those qualities on which we have complimented the author standing him in good stead. He states his dogma clearly and well. For the author an early case of carcinoma is one in which there is not a single sign of malignancy, not even a definite (and by this we take him to mean a defined, circumscribed) lump. He points out that in persons in the cancer age, 70 per cent. of all breast tumours are malignant and only 30 per cent. benign. Cancer may appear in the breast at any age; it is rare but not unknown under 30. Taking the St. Mary's Hospital figures, we find that of 173 cases of mammary cancer, 5 were under 30, and 2 were under 25 years of age. It has been seen in children 11 years of age. Of Rodman's 5,000 collected cases, 9 per cent. occurred between the ages of 20 and 30. The following

[2] *On the Breast.* By Duncan C. L. Fitzwilliams, C.M.G., M.D., Ch.M., F.R.C.S. London: William Heinemann. 1924. (Roy. 8vo, pp. 440; 166 figures, 2 plates. 30s. net.)

suppositious account of a patient with a lump in the breast is so good that we take leave to reproduce it.

"The patient is aged 50. What are you going to do? This is the difficulty, this is your responsibility. There is one thing the practitioner can do, which is the easiest way out of the difficulty, and one which will be pleasing and acceptable to the patient, that is to say, 'There is really nothing—nothing at all events to be alarmed at. Come and see me again in a month.' A month passes and there is no perceptible change. Another month and yet a third pass, and perhaps the mass is a little larger; it is deep-seated and very difficult to be sure; certainly there is no sign of malignancy, therefore it can be left quite safely. Six, eight months pass, and now there certainly is a mass which is beginning to be defined, and the skin over it is beginning to be suspicious; perhaps it does not slide from side to side or pinch up as freely as it used to.

"The practitioner half-heartedly suggests a consultation. The patient demurs; she is sure it is smaller, and she feels much better, and begs him to change the liniment. In this way perhaps another two months are passed, and at last, ten months after this mass has been suspected, a consultation is held. An operation is advised, and the growth is found to be cancer."

It is very admirable that students to-day should be taught that the signs of breast cancer which their fathers and even their elder brothers were brought up on are signs of declared and even advanced cancer. We must do much better than this if our results are to be improved. Needless to say, Mr. Fitzwilliams is in favour of the removal and microscopic examination of all suspicious lumps in the breast. On the pathological side the author breaks a lance with Sampson Handley's theory of lymphatic permeation, and it is interesting to hear the voice of criticism raised definitely against it. On the other hand, Mr. Fitzwilliams has no other weapons than a very sound common sense and a logical mind. This is not sufficient to upset a theory for which a very considerable mass of histological evidence has been adduced. Most surgeons must have felt that permeation is not so wide and enveloping an explanation as its author has claimed for it. It is their duty, however, if they disagree, to produce positive and documented proofs of the grounds for disagreement.

This book is admirably illustrated by clever and very clear drawings from photographs and blocks. Mr. Fitzwilliams has done a service in publishing it. It should have considerable educational uses, and forms an excellent book of reference, in spite of its deficiencies in detailed pathology, especially of an original kind. We can cordially recommend it to practitioners and advanced students.

GONORRHOEA IN THE FEMALE.

IN *Common Infections of the Female Urethra and Cervix*,[3] Mr. FRANK KIDD and Dr. A. M. SIMPSON have provided a clear and simple account of gonorrhoea in these organs, based largely upon experience gained in the Venereal Department of the London Hospital. The general diagnosis and general treatment are first discussed fully, and then follow chapters dealing more in detail with gonorrhoea of the vulva, vagina, and Bartholin's glands, of the urethra, of the cervix, and of the uterus, tubes and ovaries, and peritoneum. Special chapters are allotted to the difficult question of gonorrhoea in female children, and of gonococcal arthritis in women. Dr. WESTERN contributes a section on bacteriology, in which he discusses the methods of staining and cultivating the gonococcus, and the bacteriological examination of suspected cases. Mr. MAYOU has written a very adequate chapter on ophthalmia neonatorum. The subject of prophylaxis is then fully discussed; and the use of "prophylactic outfits" is strongly advocated. In an appendix are given in some detail records and statistics of 650 consecutive cases examined in the female gonorrhoea section of the venereal clinic in the London Hospital during the years 1917-20. The volume closes with a two-page advertisement of all the books, papers, and contributions to medical literature by Mr. Frank Kidd, and an index. Practitioners, for whom in particular the book is written, will find it a useful and helpful little volume. It is unquestionable that a great deal of good might be done if practitioners would undertake the recognition and treatment of gonorrhoeal cases *early*, as the condition is then quite curable, both in the male and in the female. But in the larger centres of population the necessity for venereal clinics will remain, as the treatment is rather special and somewhat prolonged, so that most practitioners would prefer not to undertake it. The use of vaccines has been avoided by the authors, both in regard to treatment and to diagnosis of cure, for reasons which seemed good to them, and which are duly set forth.

The least attractive feature of the book is the undisguised disparagement of the work of gynaecologists in connexion with gonorrhoea. From what is said it can only be concluded that the authors' knowledge of modern gynaecology is not very extensive; it would have been wiser and in better taste to have made themselves acquainted with the work of a modern gynaecological clinic before making some of their sweeping statements and comparisons.

[3] *Common Infections of the Female Urethra and Cervix.* By Frank Kidd, M.A., M.Ch.Cantab., F.R.C.S.Eng., and A. Malcolm Simpson, B.A., M.B., D.P.H.Cantab.; with additional chapters by George T. Western, M.D., and M. S. Mayou, F.R.C.S. Oxford Medical Publications. London: Humphrey Milford, Oxford University Press. 1924. (Demy 8vo, pp. xii +191; 9 figures. 7s. 6d. net.)

ETIOLOGY OF NYSTAGMUS.

IN the early part of last year Dr. FREDERICK ROBSON suggested the possibility of there being some connexion between the volatile content of coal and the production of the industrial disease known as coal-miners' nystagmus. A report of a paper on the subject read by him at a meeting of the South Wales Institute of Engineers appeared in our columns on March 31st, 1923 (p. 570). He has now published his investigations on this subject in a volume entitled *Coal Miners' Nystagmus*,[4] and he sets out to prove that the cause of this condition is a poisoning of the synapses in the central nervous system.

Dr. Robson finds that coal-miners' nystagmus is an ailment from which workmen suffer in varying degrees of intensity and disability; that the special occupation is mostly to blame for the condition; but that heredity may also play a definite part in the etiology. The disease is associated with extrinsic and intrinsic causes: the former include poisoning by mine gases and the latter certain metabolic disorders due to defects in the endocrine glands. He finds further that there are two main factors: (1) a toxaemia; (2) a neurosis. The former is evidenced by oscillation of the eyeballs and blepharospasm, the latter by a special syndrome: both may remain as permanent conditions, or, in a suitable labour and hygienic environment, may disappear. It is suggested that the synapses poisoned may be (1) in the mid-brain or (2) in the cerebellum. The evidence shows that carbon monoxide can produce anoxaemia in workmen, and it is argued that carbon monoxide, or some combination of gases, is the chief cause of the genesis of nystagmus in underground workmen in mines.

Six useful appendices are included dealing with matters relevant to miners' nystagmus, as viewed from Dr. Robson's standpoint, such as the physical and chemical properties of coal and the formation of carbon monoxide. Moreover, at the end of the book there is a report of a discussion on coal-miners' nystagmus in which many experts gave their views. It is certainly a matter of interest that, while nystagmus and blepharospasm entitle the worker to compensation, the neurosis does not do so, and the grouping together of these three conditions should materially assist towards clearing up the very complex medico-legal problem to which we referred on August 18th, 1923 (p. 288), when considering the second Report of the Miners' Nystagmus Committee.

Dr. Robson is to be congratulated on his exhaustive investigations into a most difficult subject. His present contribution to its elucidation is suggestive and should stimulate further research.

[4] *Coal Miners' Nystagmus.* By Frederick Robson, M.D. Reprinted from the *Proceedings of the South Wales Institute of Engineers*, Vol. xxxix, Nos. 2 and 4. Cardiff: Published by the South Wales Institute of Engineers. 1924. (Roy. 8vo, pp viii + 556; 16 figures. 10s. 6d.)

LORD LISTER.

IT is a little difficult to know whether to praise Dr. CUTHBERT DUKES's life of *Lord Lister*,[5] in the Roadmaker Series, more highly as a clearly stated exposition of the pathology of infection, or as a vividly human picture of a man and his message, so simply depicted that the grandeur of both stands out like an unclouded promontory. The details of Lister's life and achievements are so skilfully interwoven with a lucid account of the problems he solved that the reader is almost beguiled into the belief that the facts related are part of his own personal experience. The story of Lister's happiness in his work; his good fortune in his friendships with Pasteur, Syme, and others; his success as a teacher in Edinburgh and Glasgow; his controversies with his opponents; and the honours that came to him finally, constitutes an inspiring record which can be cordially recommended to the attention of any modern surgeon who remembers and venerates the source from which his successes spring. The book, however, is primarily addressed to non-medical readers, who will find in it a most instructive and fascinating account of the nature of infectious processes in the body, as well as the story of how the great achievements of modern surgery have been rendered possible.

In these days, when public credulity seems to be so strong and honest research is spurned in favour of fantastic imagination, such a book will serve as a valuable corrective; and it is to be hoped, in the interests of sanity of thought, that it will gain a wide circulation. The first of a series of books designed to relate the story of the Roadmakers of human progress, this book has set a very high standard which it will be difficult to emulate.

MISTAKEN IDENTITY.

THE publication of an account of the case of *Adolf Beck*, edited by Mr. ERIC WATSON, among the Notable British Trials series,[6] will remind many of our readers of the excitement which was caused by this remarkable case, in which a very grave miscarriage of justice occurred. Put shortly, the following were the circumstances.

In 1877 one John Smith, or Wyatt, who was afterwards found to be really an Austrian Jew named Meyers or Captain Weis, was charged and convicted of a number of frauds and larcenies closely resembling one another in their details and committed upon loose women. He was sentenced to five years' penal servitude and was imprisoned for four years. Soon after his release he disappeared for thirteen years, during part of which he carried on a lucrative medical practice in Adelaide, South Australia. He was in London (as afterwards appeared) again in 1894-95, when a number of frauds similar to those of 1877 were reported to the police. One of the victims saw Beck in the doorway of his own flat in Victoria Street, recognized him, and unhesitatingly accused him of being the man who had swindled her. He was arrested and identified by ten women, but not by all those who had been robbed. Some half a dozen failed to identify him, and one said she was quite sure that he was not the man. Those complainants who failed to identify Beck were, of course, not called as witnesses. The handwriting of the swindler of 1894-95 was identical with that of the convict John Smith, but the handwriting of Beck was different, although the expert who was called declared it was the same, but disguised. Beck was tried for misdemeanour and convicted and sentenced to seven years' penal servitude. He protested his innocence. The charges of larceny were unfortunately abandoned; had they been gone into, it would have been admissible for the defence to show that he was not John Smith, and to show that he was absent from England when the first series of frauds was committed. In prison he was given a number which showed that he had been previously convicted. He served more than five years of this heavy sentence. After his release he remained in London trying to procure evidence of his innocence. His reputation was not a very good one, but not such as would make it likely that he would systematically carry out small thefts from prostitutes. About this time, as was afterwards known, John Smith, *alias* Dr. Wyatt, was practising medicine in Denver, Colorado.

In 1904 four more cases of fraud similar to those of 1877 and 1895 were reported to the police. Beck was again arrested, identified by all four women, tried, and convicted, but Mr. Justice Grantham, having some doubts, postponed sentence. Ten days later William Thomas, *alias* John Smith or Wyatt or Meyers, was arrested in the act of pawning rings, which he had obtained from a woman by pretences exactly similar to those by which all the other frauds and larcenies had been perpetrated. He pleaded guilty in September and was sentenced to five years' penal servitude. There can be no shadow of doubt that he was guilty of all the frauds and larcenies in 1877, 1895, and 1904, and that Beck was completely innocent. The latter was pardoned and awarded £5,000 as compensation. He died penniless in the Middlesex Hospital in 1909.

The evidence upon which Beck was convicted, besides the unfortunate blunder of the handwriting expert, consisted entirely of the positive identifications by the women and by one police pensioner, who most emphatically swore that he was Smith, whom, however, he had not seen for nineteen years. No stolen property was traced to him. These things being so, it might be supposed that there was an altogether exceptional likeness between Smith and Beck. But it appears that it was not so. Beck was a blue- or grey-eyed Norwegian. Smith was a brown-eyed Austrian Jew. Their ears were strikingly unlike. Beck's ear had a large, free lobule, while the lobule of Smith's was very ill developed and adherent to the neck. Beck was uncircumcised, while Smith was circumcised. The police methods of taking and recording personal characteristics and marks before the introduction of the finger-print system seem to have been very loose and inaccurate. When Smith was in prison, in 1879, as a Christian, he claimed to be a Jew, and was accordingly examined by the surgeon, who reported him as circumcised; yet this fact was not entered on his record. Beck was not in England when the first series of frauds was perpetrated, and therefore he could not be guilty of them, but the Common Serjeant refused to allow his counsel to go into this question. The Committee of Inquiry which investigated the case reported that in its opinion this ruling could not be supported, and that "He was convicted on evidence from which everything that told, or might tell, in his favour, was excluded. His case was never tried."

It is to be hoped that the adoption of more accurate methods of identification, and the establishment of a Court of Criminal Appeal, together with certain changes in procedure, make the recurrence of such an appalling miscarriage of justice very unlikely. In his book on *Circumstantial Evidence*, Mr. Justice Wills remarks "that what are supposed to be the clearest intimations of the senses are sometimes fallacious and deceptive." In *Celebrated Trials to the Year 1825* there are records of some strange cases of mistaken identity. In 1749 one Coleman was convicted of murder. He was identified by the victim before her death. Two years afterwards the three men who had committed the crime were convicted and confessed their guilt and Coleman's innocence. Nearly half a century later two men, named Clinch and Mackly, were hanged for murder. Years afterwards two others confessed to having committed this murder. This case is an instructive one, for it affords a striking instance of what we may call progressive certainty of identification. An eye-witness of the murder stated before the coroner that she could not describe the murderers, except that they were "lusty," and one had a dark-coloured coat on. Yet at the police office her identification was "direct and positive." There appears to be a tendency in witnesses as an inquiry goes on to think that they recollect details which they had not mentioned at first, and thus to progress from a vague and general description to a positive and emphatic identification. At the police station the prisoner is picked out, perhaps with some hesitation, from a number of others, among whom there may, or may not, be some who resemble him in dress or person. In the next stage, before the

[5] *Lord Lister* (*1827-1912*). By Cuthbert Dukes, M.D., M.Sc., D.P.H. The Roadmaker Series. London: L. Parsons; Boston, U.S.A.: Small, Maynard and Co. 1924. (Cr. 8vo, pp. 185; 1 portrait. 4s. 6d.)

[6] *Adolf Beck* (*1877-1904*). By Eric R. Watson, LL.B. Notable British Trials. Edinburgh and London: W. Hodge and Co., Ltd. 1924. (Demy 8vo, pp. xi + 296; 7 plates. 10s. 6d. net.)

police magistrate, the witness is more certain, and in the final scenes of the trial, by which time he has become quite familiar with the prisoner's appearance, the vague memory of the original criminal is confused with that of the prisoner at the bar, and evidence is given accordingly. In such a case as that of Beck the wish to identify is father to the thought. These women were smarting under a sense of injury and, as one of them said, wanted revenge. At the police station the complainant feels that the police hope for an identification, and that if she cannot pick out the prisoner she is a failure. Having picked him out, she has taken a side, and a natural pugnacity persuades her at each step that she is more sure of the fact.

Personal identification of this sort, unless supported by weighty evidence of another kind, ought not to be enough to secure a conviction. In the case of Steenie Morrison there was grave evidence of the prisoner's guilt, but an important link in the chain consisted of the evidence of a cabman, who professed to identify him after only seeing him get in and out of the cab on a winter's night. The jury found him guilty, but the judge and the Home Secretary evidently had very serious doubts, and he was reprieved. There are indeed on record cases in which two persons were almost indistinguishable one from another. Such a case is related by Mr. Justice Wills in the book above mentioned. In a more recent case the accused was identified from his general appearance and by the loss of one finger. Luckily for him the real culprit was arrested and proved to have an exactly similar mutilation and a strong personal resemblance.

NOTES ON BOOKS.

THE *Medical Directory*[7] for 1925 has been issued by Messrs. Churchill; it is arranged on the familiar lines which have rendered it so convenient a work of reference to the medical profession. The number of names contained in this edition is 49,351, which exceeds that in the previous issue by 1,743; it is greater than that in the issue for 1916 by 6,781. There is an increase in all areas, but the ratio of increase appears to have been greater in Scotland and Ireland than in England and Wales; this may be, in part, accounted for on the supposition that graduates and diplomates in Scotland and Ireland register with the national branch of the General Medical Council shortly after qualification, though they may afterwards settle in practice in England or abroad. The increase in the list of practitioners abroad, which includes the Dominions, is nearly 300. The only section in which there is a decline is that of the Services, where the total has dropped from 3,452 to 3,318. The directory of dentists is this year omitted, which we fear will be rather inconvenient to the medical profession, though the publishers are about to issue separately a *Dental Surgeons' Directory*. A beginning is made with the publication of a list of members of the British Association of Certified Masseurs; all the members are pledged to work under the direction of registered medical practitioners; the editors intend to make this list more complete in future editions. As a directory of the British medical profession we believe that this volume is more complete and informing than any corresponding directory published in any other country. The American Medical Association publishes an *American Medical Directory* containing the names of all legally qualified physicians in the U.S.A., according to States; but though the volume is very large, the particulars given of each person are very condensed. The American directory also contains the names of practitioners in the Dominion of Canada. We congratulate Messrs. Churchill on the success of their enterprise, which, of course, can only be carried through with the co-operation of the medical profession. The new volume is the eighty-first annual issue.

After perusing Dr. VARLEY'S small book, *Radium: Its Therapeutic Uses in General Practice*,[8] the question why he wrote it arises. The preface tells us that his object was to "bring before the general practitioner and medical student the conditions in which this valuable therapeutic agent may be of use"; but to write such a book the author ought not only to be fully conversant with his subject, but should have had sufficient practical experience. The latter Dr. Varley frankly admits he has not had. The clinical material at his disposal has been all too little. For example, he devotes three pages to commenting on the use of radium for the treatment of carcinoma of the rectum. We then turn to his series of cases, when we find only one of this disease; it is fully reported, but is of little or no clinical value as far as radium is concerned, as he only treated it once, and then, apparently, by placing a tube of radium on the outside of the body and not in the rectum in apposition to the growth; two months later the patient underwent a course of æ-ray treatment, but was not examined with the sigmoidoscope until six months later. One case of carcinoma of the stomach is reported; the largest series consists of seven cases of carcinoma of the cervix, mostly inoperable, and some recurrent after hysterectomy; in none of them were needles of radium embedded. Of Hodgkin's disease there are three cases, of spring catarrh only one. Concerning keloids Dr. Varley says "the treatment must be continued over a long period at from four to six weekly intervals." This statement will, we fear, be of little use to the general practitioner who has some radium and who requires exact instructions as to the strength, screenage, and length of exposure. The author states that he has another book in preparation which will, he hopes, "lead to a more intelligent understanding and recognition of the uses to which this valuable therapeutic agent may be applied." May we be allowed to express the hope that if and when Dr. Varley publishes this new book he will be in a position to quote from his own experience over a long, or at least sufficient, series of cases of such common conditions as carcinoma of the uterus, rectum, and breast?

So many medical men flock annually to Switzerland to join in winter sports, and especially in the absorbing sport of ski-running, that it may not be unprofitable in a medical journal to call attention to a new work on the subject by Dame KATHARINE FURZE, G.B.E.[9] In her little book, which is written particularly for the beginner, she deals with such subjects as the cost of a ski-ing holiday, equipment, where to go, and how to deal with all the emergencies and difficulties that are incidental to the sport.

A report entitled *Opium in India*[10] has been prepared by the National Christian Council of India, Burma, and Ceylon. This report embodies the results of an inquiry into the consumption of opium in India, and the evidence is summarized under six heads: (1) how opium is used in India, including its free and unauthorized administration to children; (2) the effects of the use of opium; (3) an inquiry as to the possibility of separating its legitimate and illegitimate uses. The conclusion is reached that hardship would probably not be caused by restricting consumption to medical and scientific needs, though there is a division of opinion on this point; (4) the rarity of opium smoking; (5) the distinction between smoking and eating opium; (6) public opinion on the subject. The evidence printed in the report was supplied by members of the Indian Medical Service, missionary doctors, Indian private practitioners, educationists, and social reformers.

[7] *The Medical Directory, 1925.* London: Messrs. J. and A. Churchill. 30s. net.

[8] *Radium: Its Therapeutic Uses in General Practice.* By G. H. Varley, M.D.Oxon. Oxford Medical Publications. London: Humphrey Milford, Oxford University Press. 1924. (Cr. 8vo, pp. viii+103. 6s.)

[9] *Ski-Running.* By Katharine Furze, G.B.E. London: Longmans, Green and Co. 1924. (Cr. 8vo, pp. ix+134; illustrated. 4s. net.)

[10] *Opium in India.* Calcutta: The National Christian Council of India, Burma, and Ceylon; London: The International Missionary Council. (Extra post 8vo, pp. 81. Great Britain, 1s. post free.)

PREPARATIONS AND APPLIANCES.

Thromboplastin and Thyroxin.

THROMBOPLASTIN (Squibb) is an extract of the brain substance of the ox, and contains the lipoid substances of brain described by Hirschfelder. It is prepared according to the method devised by Dr. A. H. Hess. Comparative experiments by Hanzlik and Weidenthal showed that it was more efficient as a blood coagulant than any other haemostatic tested. Dr. Cronin of the New York City Department of Public Health reported on its use in 2,036 throat operations, and concluded that it was of great value in arresting haemorrhage. The preparation can be applied locally direct to the bleeding surface, and has been found of special value in operations on the throat, nose, and rectum. It can be given by the mouth in cases of gastric haemorrhage. A special sterilized preparation is available for hypodermic or intramuscular injection which, it is believed, will be useful in shortening the coagulation time in "bleeders."

Thyroxin (Squibb) contains the active principle of the thyroid, and is prepared in two forms: Pure crystalline thyroxin for intravenous use and the sodium salt of thyroxin in tablets for administration by the mouth. The chemical name of thyroxin is trihydro-triiodo-oxybeta-indol-propionic acid, and it contains 65.1 per cent. of iodine. The pure salt is costly to prepare, but the partially purified salt, which can be used in tablet form, is less expensive than an equivalent amount of desiccated thyroid, and is three hundred times as active. Desiccated thyroid contains about 0.2 per cent. of iodine, not more than

one-half of which is in the form of thyroxin; consequently the official method of standardizing it by its iodine content is faulty, since it gives no certain indication of the therapeutical activity of the preparation. Biological standardization of thyroid is a difficult process. Thyroxin in tablet form is free from all other iodine compounds, and therefore its activity can be estimated from its iodine content. Hence the tablets provide a thyroid preparation of standard and uniform activity.

The potency of thyroxin must be emphasized; a normal individual cannot take 2 mg. of thyroxin a day without developing symptoms of hyperthyroidism. The dose is 1½ to 2 mg. a day (1/42 to 1/32 grain) for cases of high grade myxoedema, and 0.2 to 0.4 mg. (1/320 to 1/160 grain) a day for a small cretin. Too large doses will produce very undesirable symptoms, particularly when administered over prolonged periods.

Thyroxin, if used intravenously, must be administered with great care; 1 mg. thyroxin given intravenously will raise the metabolic rate 2 per cent. in an adult weighing 150 lb.; the maximal effect is produced ten days after the administration of a single dose, and the action lasts for no less than fifteen days. Obviously, the action of thyroxin administered intravenously is so potent and so prolonged that it can only be used in this way with safety if the patient is under very careful observation.

The English agents for the preparations are Messrs. Quelch and Gambles, Ltd., 211-215, Blackfriars Road, London, S.E.1.

British Ichthyol.

Ichthyol is a substance obtained from a bituminous schist which contains fossil organic matters of marine origin, chiefly those of fishes. It was first prepared in Germany from a material occurring in the mountains which separate Bavaria from the Tyrol. Distillation of the schist produces an oil rich in sulphur. From the oil, by chemical treatment, a substance is obtained having the constitution of a sulphonic acid. The ammonium salt of the sulphonic acid forms medicinal ichthyol. Schists containing marine deposits of like nature are found in this country. One of these, occurring in Norfolk, furnishes material for the manufacture of ichthyol in the Crookes laboratories. We have made an analytical examination of the product, and have found, by comparison with the German article, that the latter exhibits no chemical property which is not equally well represented in the English drug. We are satisfied that it is genuine ichthyol and that it is prepared with no less refinement of manufacture than the German substance. The British Colloids, Ltd. (22, Chenies Street, London, W.C.1), by whom this ichthyol is marketed, offer a series of preparations of ichthyol, which includes capsules, ointment, and soap.

Forceps for the Treatment of Urethral Caruncle.

Dr. T. H. HAYDON (Marlborough) writes: This simple operation is sometimes more difficult to perform completely and without unnecessary damage to the urethra than is usually supposed, and I have devised a pair of forceps which seem to make this both simple and quick. Taking a pair of Jordan Lloyd's forceps, I ground off one side. This rough improvisation seemed just what was needed, and so I asked Messrs. Down Bros. to make up the forceps perfectly. This they have done, and I find the new instrument most useful. After grasping the necessary amount of tumour, the part in the hollow of the forceps can be easily cut off with the cautery without touching any other part of the urethra. The annexed illustration needs no explanation.

ROYAL SOCIETY OF MEDICINE.

ANNUAL DINNER.

THE annual dinner of the Royal Society of Medicine was held on November 26th; the President, Sir STCLAIR THOMSON, was in the chair, and there was a large attendance.

The toast of the Society was given by Sir AUCKLAND GEDDES, who said that, though he had strayed from the ranks of the medical profession, he believed that the medical training he had received had been as good a training as could be devised for one whose life had been cast as his had been. Recollections of anxiety nobly borne, and courage displayed in domestic tragedies, had proved to be in his case the only really valuable part of the wastefully expensive education he had had. The whole of the work of the medical profession bore the glamour of romance, but one of the great difficulties of the man engaged in the practice of medicine was to keep abreast with the growing thought and knowledge of the subject. The Society existed to help him to overcome this difficulty. Sir Auckland Geddes referred to the wonderful growth of the library of the Society and appealed for the help of generous benefactors.

The PRESIDENT, in reply, said that the gathering was held in fulfilment of the motto of the Society, *Non est vivere sed valere vita*. This had been translated by a schoolboy as "What's the use of being alive if you don't have a good time?"; but Sir Humphry Rolleston, a former president of the Society, had suggested as more correct, "Life to be worth living must be lived well." The President then went back to the origin of the Society, and recalled how Sir Andrew Clark, when president, in 1892, of the Royal Medical and Chirurgical Society, had sought to bring about the amalgamation of the medical societies in London to form a Royal Academy of Medicine. The title did not matter very much, but the change, which had been suggested again by Mr. James Berry when president of the Medical Society of London in 1922, might yet be brought about. The amalgamation shadowed forth by Sir Andrew Clark had been realized largely through the efforts of one man—Sir John MacAlister—who had worked at it for more than five years before Sir Andrew Clark died, and who toiled on it for fifteen more years before it was accomplished. He had continued another seventeen years to better what he had already bettered, and altogether had served the Society for thirty-seven years. It was a great grief to all present that Sir John MacAlister had been forbidden by his doctor to be present, but all who realized what he had done for the Society would wish to unite in sending him a message conveying their gratitude and affectionate greetings. The care of the library was in the enthusiastic hands of the honorary librarians, Mr. Walter Spencer and Sir Humphry Rolleston, and he was glad to announce that Dr. Arnold Chaplin had completed the cataloguing, mounting, and indexing of the Society's very fine collection of over 4,000 medical prints. The Society was greatly indebted to the care and foresight of its honorary treasurers, Mr. C. H. Fagge and Dr. Farquhar Buzzard, to the unselfish work of the Council, and to the devotion of the honorary secretaries. Dr. A. M. H. Gray had retired from that office after five years' service, and had handed on his work to Mr. Girling Ball and Dr. Letheby Tidy. Turning to Sir Auckland Geddes, he said that the country was to be congratulated on his acceptance of the chairmanship of the Food Inquiry. All were proud of his record. It would not be forgotten that he went through the South African war as a lieutenant in the Highland Light Infantry; that he had taken his degree with the gold medal at Edinburgh in 1908, and that little more than ten years ago he was making models in the dissecting room of McGill University, Montreal. Then came ten years of glorious devotion to his country; as Director of Recruiting, as a member of Parliament, as Minister of National Service, as Minister of Reconstruction, as President of the Local Government Board and of the Board of Trade, as brigadier-general, when he was gassed, in France, as Principal of McGill University, and British Ambassador to the United States. This was a great record of service for a man who was only 46. Paul Rubens, the great painter, was also a man of affairs, a courteous Ambassador to Paris, Madrid, and London. One day a Government official, calling upon him, found him painting at his easel. "I see," said the official, "His Excellency the Ambassador distracts himself with painting." "No," said Rubens, "His Excellency the painter distracts himself with diplomacy." The Royal Society of Medicine offered its warmest thanks to His Excellency the Doctor.

Sir GEORGE BLACKER proposed the health of the guests, to which the Attorney-General, Sir DOUGLAS HOGG, replied. The two professions of lawyers and doctors, he said, had a great deal in common, and were proud to have kept their calling non-political. Both lawyers and doctors were very loyal to their own profession, but in one respect doctors set lawyers a great example: that was in the immense amount of voluntary work the medical profession rendered in hospitals and elsewhere. During his tenure of office he had seen many cases in which the poorer people of this country needed free legal assistance almost as badly as they needed medical assistance, and he would have been proud had his profession been able to claim the same record of voluntary and ungrudging service as that which the medical profession rendered to that class day by day.

British Medical Journal.

SATURDAY, DECEMBER 6TH, 1924.

THE GENERAL MEDICAL COUNCIL

On November 28th the General Medical Council completed, with its winter session, another year's work for the profession and for the public. Our report of the proceedings, begun last week, is continued in the SUPPLEMENT at page 207. As is usual in November, the session was largely devoted to consideration of cases of discipline—a branch of the Council's activities peculiarly open to misconception on the part of the general public, in whose interest and for whose protection it is undertaken. The predominance of disciplinary business did not, however, exclude from the agenda certain items of a different kind, which illustrate at once the extent of the Council's responsibilities and the complexity of some of the issues with which it has to deal. An example is the position with regard to medical registration in the Irish Free State—a question postponed in August at the express request of the Free State Government, and now complicated by the failure of the Senate to carry the emergency measure designed to legalize the existing position pending full discussion and settlement. Another example is the failure of Calcutta University to fulfil the conditions essential to the continued recognition of its degrees as qualifications admissible to the British *Medical Register*, and the consequent withdrawal of recognition. In Canada legislation effected in Saskatchewan and projected in New Brunswick has imposed a temporary check on progress towards the establishment of complete reciprocity between the United Kingdom and the Dominions as a whole. On the other hand, some definite steps seem to have been made towards the relief of British practitioners in Italy from the disabilities imposed on them by recent legislation, and it may be hoped that the difficulty will soon be satisfactorily settled. These are all matters which have been under consideration for some time, and, since it is neither practicable nor desirable to isolate the work of a single session, we may recall the additional fact that the Pharmacopoeia Committee has before it proposals from the Belgian Government for a second International Pharmacopoeial Conference to be held at Brussels in 1925; the subject for special consideration at that conference is a project to establish a permanent international bureau for general business relating to the unification of national pharmacopoeias and kindred subjects.

The moment, indeed, seems opportune for a longer retrospect than that of a single year, for we stand at the close of the five years of service in the Council of the six direct representatives of the members of the profession in practice in Great Britain and Ireland, and the period, in medical as in national development, is one of more than ordinary interest. It has been essentially a period of adjustment and transition, in which the profession has entered more or less consciously upon new relationships—at home by the establishment just before its opening of the Ministry of Health, and abroad by the creation of the Health Organization of the League of Nations and the birth of a new international health consciousness. It has seen also the development of a public demand for reconsideration and revision of the National Health Insurance system and of lunacy law; and it has been for the medical profession, as for the community, a time of testing and of seeking for some safe path of ordered progress after the distraction of the war and demobilization. It is therefore well to inquire how the Council has responded to the call made by such general conditions.

The most salient feature of the five years' work is the general review of the medical curriculum, and the issue in 1922 of revised rules for admission to the *Medical Register* of Diplomas in Public Health. The emphasis throughout has lain unmistakably upon the preventive aspect of medicine. Beyond this, the issue of the amended Warning Notice in respect of advertising and canvassing, and the increasing prominence among disciplinary cases of matters connected with certification and with oblique methods of advertising may be noted as evidence of sensitiveness to changing conditions and standards. Finally, in inter-professional relationships, the General Medical Council has entered on a new phase with the passing of the Dentists Act in 1921, the creation of the Dental Board, and the consequent modification of its own functions and personnel. A fitting episode this for a period in which the progress of preventive medicine is a dominant feature. The Dental Board seems to have modelled its procedure in the main on that evolved by the Council—a high compliment to the efficiency of the senior body. But the constitutions of the two are in strong contrast; for whereas only six out of the forty-one members of the General Medical Council are elected by the profession of which it is the statutory governing body, provision is made for election to the Dental Board by practising dentists of six out of a total of thirteen members. The provision for an appeal from the Board to the High Court in cases of removal from the *Dental Register*, or of refusal to register, is another innovation. The contrast serves as a reminder that the Medical Act of 1886, by which the existing measure of direct representation on the Council was secured, has never been accepted by the profession as more than a milestone on the road of medical reform comparable to that passed when the earlier Act of 1858 came into force. The ultimate goal is as yet barely in sight. The Royal Commission of 1881 actually favoured a far more generous measure of reform than that secured, both as regards the constitution of the Council and in other respects; and the British Medical Association, which, as most of us fail to remember, was a chief instrument in securing the initial legislation, has never allowed its original objective to be entirely forgotten. Thus, in 1906 the Representative Body reiterated the opinion that at least half the members of the Council ought to be elected by the general body of practitioners, and the meeting at Bradford which put forward the four practitioners who will represent England and Wales in the Council for the next five years stated emphatically that the time is ripe for a reconsideration of the question, and instructed the Council of the Association accordingly. That is one aspect of the matter, and if it were the only one it might well be asked why progress has been so long delayed. The other is illustrated by the figures of the voting at the last seven elections of direct representatives for England and Wales. These show a poll rising from 39.4 per cent. to 55 per cent. of the total electorate. This apathy may explain delay, but it is hardly self-explanatory. Nor can it be argued that the average member of the profession is not touched by the activities of the

General Medical Council, and has no interest in its deliberations. The present very cursory review is sufficient to demonstrate the contrary. To an increasing degree these activities affect him closely in every field of practice. Rather, the key to the position must be looked for in the proverbial relationship between the good and the best in matters constitutional. The fact that the constitution of the Council remains so nearly unmodified after thirty-eight years must be taken as a tribute, not to its intrinsic excellence, but rather to the soundness of the work which the Council has actually performed.

THE ENCOURAGEMENT OF BASIC RESEARCH.

THE National Union of Scientific Workers has issued a report on the encouragement of basic research,[1] in which it discusses the value of research to the community, the motives of research workers, the financial encouragement they should receive, and the obligations of their work. The views expressed in this report are of peculiar interest because they represent the opinions of people actually engaged in scientific investigations, who are themselves familiar, therefore, with the difficulties which attend this mode of life, with the misconceptions entertained about it, and with the defects that follow from lack of organization. The National Union of Scientific Workers is not a trade union designed to protect a particular section of the community. It exists to further a cause which all scientists have at heart, and to voice the opinions of a valuable band of citizens who have been too long inarticulate.

The motives of research workers are, speaking generally, as mixed and as commonplace as those of their neighbours. It is well to recognize this fact, and to discard the illusion that the research worker necessarily pursues a lofty course inspired by an ideal superior to that which moves the remainder of mankind. One of the most powerful motives of the research worker is undoubtedly a desire for knowledge for its own sake; but mere love of knowledge, unaccompanied by any other motive, is seldom sufficient to lead to the laborious investigation imposed by research. The desire for reputation, not to be confused with base ambitions towards notoriety, is a worthy motive in research workers; many of them have enjoyed the companionship of older scientists, whose approval they look for as a gratifying reward. The expectation of being able to publish an important piece of research, and thereby earning a position in the ranks of some learned society, determines the choice of a way of life for many younger scientists. In medical science the pecuniary rewards of research work are not, and are never likely to be, as substantial as those of the practising physician or surgeon, but the atmosphere of the laboratory offers attractions unknown in the busy consulting room or operating theatre; such attractions are leisure to think, freedom from interruption, and free play for the imagination. Among motives we have to reckon also with a desire for some more responsible post, such as a professorship, with its attendant intellectual status and greater security.

It is interesting to notice that when discussing the financial encouragement which should be given to research the National Union of Scientific Workers unsparingly condemns the system of patents, prizes, and special grants for successful work. Payment by results is an impossible method for research work, because, as experience has shown, the most fruitful work has often been some fundamental inquiry into a scientific problem which seemed to offer very little prospect of practical gain. To dictate a practical objective would hamper much useful investigation. Moreover, it is extremely difficult justly to apportion credit for a discovery. The individual to whom the coveted distinction is ascribed has sometimes done little more than add the final stone to a building whose foundations have been laid and whose walls have been built by a host of workers of whom the world never hears. On the other hand, indirect encouragement by means of special grants for apparatus and assistance in publication of results is approved as a satisfactory method of financial encouragement.

It is recognized that some scientists can only do the best kind of research work when completely free from all other duties, such as teaching or routine work. Provision must be made for workers of this temperament, and they must be guaranteed a salary sufficient to enable them to be secure from financial anxieties. Other research workers prefer to combine some routine work with their experimental studies, and these are most happily employed in some university or hospital appointment, which enables them to spend part of their day in teaching and the other part in research.

The National Union of Scientific Workers is wise in insisting on the value of research to the community, for this is an aspect of the research question often unnoticed. Apart from the store which research workers add to the knowledge of the country, the inclusion of men and women with the research type of mind should be sought after in every community. Open-mindedness and breadth of view are developed by the search for truth, and the whole community benefits directly by the presence within it of such intellectually active citizens, who contribute qualities that cannot be conferred in the same measure by any other intellectual occupation.

[1] Report of National Union of Scientific Workers, 25, Victoria Street, S.W.1. Price 6d.

RABIES.

IT is curious that until comparatively recent times little interest was taken in the prophylactic work against hydrophobia in man by the eradication of rabies in the dog. There is no doubt that the disease is almost exclusively carried to man by dogs, and that wild canidae and cats and other domestic animals play a relatively small part. It is obvious that if this question were tackled seriously the human problem would cease to exist.

We were able some time ago[1] to draw attention to the employment of prophylactic vaccination in Japan and America. Dr. Kondo, of the Japanese Ministry of Agriculture and Commerce,[2] has recently given some further details of the work in the Far East. The vaccine is prepared from the spinal cord and brain of dogs—these being more suitable for this particular purpose than rabbits—which are inoculated with fixed virus five to six days before killing. The central nervous system is emulsified, five parts of phenolized glycerin solution being added to one part of tissue. The filtered emulsion is incubated for three days at 37° C. Dogs are inoculated subcutaneously with 3.5 c.cm. of this vaccine, sheep and pigs with four to five times this amount, and horses and cattle with ten times. This gives a definite

[1] BRITISH MEDICAL JOURNAL, 1924, i, p. 105.
[2] *Veterinary Medicine*, 1924, p. 592.

immunity lasting at least one year. The method has been in use since 1919 with signal success, and, although exact figures are not available, Kondo estimates that about a quarter of a million dogs have been treated. It seems, however, that it is successful only if used before infection.

At the present day dogs suffering from rabies are almost invariably killed. Vallée and Ringard in 1922,[3] in an attempt to provide an alternative to destruction, gave the results of their experiments with Marie's method. This, however, did not prove very successful, and presented many practical difficulties. More recently Ferni[4] has applied his curative sero-vaccine method to domestic animals. This consists in the subcutaneous injection of a mixture (in 1 per cent. carbolic acid) of a fixed virus of high virulence and a special serum of equine origin. The serum provides a passive immunity which permits the incubation period to be extended, and so assures the production of an ultimate active immunity. It is claimed for this sero-vaccine that not only is its immunizing power very high, but that it is absolutely harmless, is sterile, and has high keeping properties. The treatment in man consists of forty injections given subcutaneously twice daily. The material is sent out from the Sero-therapeutic Institute of Milan in ampoules ready for use in the patient's own home. Under the name of "antilyssin" a similar preparation is now available for animals. Dogs receive thirty doses of 5 c.cm. in fifteen days, horses fifty half-daily doses of 20 c.cm.

It is clear that some attempt at the eradication of canine rabies might now be seriously considered. That the position is realized in Britain is shown by the fact that the Ministry of Agriculture imposes a period of quarantine on all dogs entering the country; yet the Ministry of Health seems to take no hand in controlling a contagious disease of animals which endangers the health of man. The Ministry of Agriculture is concerned primarily with the health of animals from the point of view of the stock owner and farmer. A certain amount of overlapping between the two Ministries is inevitable, but in this case the danger is mainly to man, and it is therefore a subject of importance to the Ministry of Health. The quarantine at present imposed is six months—a period usually sufficient, although dogs may become rabid more than six months after infection. One case has recently been reported in considerable detail by Schoening[5] from America: a dog kept under experimental conditions developed the disease sixteen months after inoculation, although animals inoculated at the same time and with the same material developed typical rabies in a short time. Since the introduction of only one infected dog into the country is sufficient to cause an outbreak, it will be realized that six months is an inefficient quarantine. It is possible that the recent epizoötic was caused by a dog which developed rabies after passing through the quarantine, and not by a smuggled animal as has been suggested. However, a longer period than at present imposed would make the already irksome detention intolerable, and there remains an obvious case for the introduction of more effective and scientific methods. The detention paddock and the pole-axe have too long been methods of eradication among our animals, and modern work here and abroad indicates that science can provide more efficient substitutes.

[3] *Rev. Gén. Méd. Vét.*, p. 165.
[4] *Clin. Vet.*, 1924, xlvii, p. 161.
[5] *Journ. Amer. Med. Vet. Assoc.*, 1924, p. 153.

AN ATTACK ON FREUDIAN DOCTRINE

THE imposing psychological edifice associated with the name of Sigmund Freud has been fiercely assailed by critics who have surveyed it from many points of view. Some dislike its architectural scheme; others doubt the solidity of its foundation and the stability of its superstructure. In the course of last March six conference sessions on psychology were held in the Institut des Hautes Études de Belgique, and Professor Paul Sollier has contributed to two issues of *Le Scalpel* (October 4th, p. 1069, and October 11th, p. 1089) a summary of the proceedings, which indicates some of the chief lines of attack. Sollier begins by distinguishing sharply between psycho-analysis, a method of investigating the unconscious and of treating certain neuroses and psychoses, and the teaching of Freud. This teaching he characterizes as an interpretation of data which has now grown into a vast psycho-medico-philosophic system, a kind of metaphysics of the unconscious, a universal elucidator of normal and pathological psychology, sociology, ethics, religion, and art. Freud, he says, has been greeted on the one hand with enthusiastic praise, some disciples having declared that henceforth psychology will be chronologically divisible into two periods—namely, before and after Freud; while, on the other hand, his teaching has been unkindly described by some opponents as the scholastics of pornographical metaphysics. Sollier sums up the Freudian doctrine as a process of analysing the patient's mind and investigating his dreams, lapses, associations of ideas, and his neuropathic or psychopathic symptoms, in the course of which the explorer discovers—or imagines—the existence of a latent "unconscious" which originates complexes, a libido, and a pan-sexualism particularly disturbing in infancy. When these imperfect infantile instincts come into conflict with conscience and social morality, the development of the normal adult sexuality is delayed by a kind of arrest of psychic development. Sollier declares that Freud has borrowed largely and without acknowledgement from Charcot, who traced the origins of hysteria to youth and adolescence; from Janet, the discoverer of the facts on which is formulated the idea of the "complex"; and from himself. With this material Freud has constructed a pyramid resting on its apex. Sollier finds in it two main principles: the first hypothecates a psychological determinism; nothing ever happens by chance—free associations do not exist. This principle, Sollier maintains, has been by no means established, and he asks if a single event does not give rise to numerous chains of associations; or again, if different events may not end in the production of one and the same idea, having travelled along diverse roads of associations. Sollier insists that no reason has yet been given why there must be this return to the primitive form of thought. Passing to the Freudian technique, he declares that this is so indefinite that two psychologists may interpret differently the same dream; or again, the same complex may give rise to different dreams. He asks where in all this is the sound scientific method so necessary if the unknown depths of our minds are to be accurately plumbed. As for Freud's conception of the "censor," Sollier remarks that this hardly harmonizes with the rigid psychological determinism on which the whole doctrine rests. Why is the censor only a product of fear and shame; why may not kindliness, health, and a love of right living take part in forming our moral conscience? Coming to dreams—the corner-stone of the Freudian edifice—Sollier insists that the postulate that there is a manifest content of the dream conforming to the psychology of the patient is by no means established; yet Freud's whole argument rests upon it. A second postulate, that the strongest complexes are those evoked by sexual emotions, rests on no firmer foundation. Yet on these two postulates the psycho-analyst bases his discovery of the latent content of dreams

A dream, according to Freud, is always the realization of a desire of the infantile sexuality, which desire, confronted by the censor, tries to disguise itself so as to escape like a truant from a schoolmaster. This, says Sollier, is no longer metaphysics, but mythology. He cannot accept the assumption that adult sexual perversions are merely survivals of the infantile sexual instinct, and that in the neuroses are found the same elements as in perversion—namely, unsatisfied sexual desire. He remarks that if this were really the all-powerful cause, neurosis ought to be the normal condition of all young people who are continent. He then tilts indignantly at the idea that if the patient cannot satisfy his cravings he takes refuge in a disease; and asks why the possession of a paralysis, a hysterical contracture, spasms, phobias, or obsessions is more gratifying to him than yielding to his normal sexual impulses. Finally, he discusses the dangers of therapeusis on these lines, and concludes with a warning to medical practitioners to be on their guard against such appeals to credulity and dogmatism; he asks them to believe that it is no more than a vast psychological and metaphysical romance built up from data most of which have been distorted.

TOXIN-ANTITOXIN AND ANATOXIN.

A CERTAIN amount of anxiety has arisen with regard to the use of a mixture of toxin-antitoxin in antidiphtherial inoculation. In the JOURNAL of March 8th (p. 454) we reported the occurrence in America of some severe reactions following the use of a frozen toxin-antitoxin mixture. The suggestion had been made that dissociation of the toxin from the antitoxin was caused by prolonged freezing. Jules Renault and Pierre-Paul Lévy, who have studied this problem intensively, publish some interesting results in the *Annales de Médecine*, October, 1924 (p. 261). They have been using the Park-Zingher toxin-antitoxin mixture, and they first emphasize the difficulty of its preparation and some dangers that attend its administration. This mixture is so prepared that the toxin and antitoxin units neutralize each other as nearly as possible. Very little latitude for error is possible, and controls and repeated titrations are therefore necessary. The two authors confirm the view that toxin and antitoxin do not form a stable compound; though they are physiologically antagonistic to each other, each preserves its individuality in a mixture, and the antitoxin appears to deteriorate more rapidly than the toxin. Hence within a few months of preparing a neutral mixture it is found necessary to add a proportion of antitoxin to correct the deterioration. In administration three injections, each of 1 c.cm. of the mixture, are given subcutaneously, and immunity, as judged by a negative Schick reaction, takes from two to six months to establish. The two authors have produced a modification of the toxin-antitoxin mixture, which they claim is more easily prepared, obviates the need of control, and is absolutely safe. Their mixture contains a large excess of antitoxin over the toxin, the two being mixed just before inoculation. They found that the optimum mixture for prophylaxis contained in each dose 300 units of toxin and 100 units of antitoxin, using Ehrlich's notation (1 unit of antitoxin neutralizes 100 units of toxin). The method of preparation is simple; the titre of 1 c.cm. of standard toxin is 300 units, and of a standard antitoxin 250 to 300 units. Each dose will, therefore, consist of 1 c.cm. of toxin and of 0.4 to 0.33 c.cm. of antitoxin. Three injections are given subcutaneously at intervals of eight days. The reaction is said to be slight; there may be some pyrexia and a little local redness and pain, but vomiting rarely occurs. Immunity, shown by a negative Schick reaction, is established in three to six months. According to Renault and Lévy, three injections confer immunity in 80 to 90 per cent. of the cases; two injections in 66 per cent.; and one injection in 40 per cent. They found that the immunity persists as long as that obtained with the Park-Zingher mixture—namely, for two years at least, and considerably longer in the great majority of cases. They also report good results from the therapeutic use of their mixture. In mild cases they employ the prophylactic dose of 300 units of toxin and 100 units of antitoxin. In severe cases the amount of antitoxin in the dose is increased to 2,500 to 5,000 units, the amount of toxin remaining at 300 units. At the end of their paper a note regarding the investigations of Ramon is supplied on the authority of Professor Roux, director of the Pasteur Institute. Ramon found that by incubating diphtheria toxin to which 3 to 4 per cent. of formol had been added, for at least a month at 37° C., he could so attenuate it that a guinea-pig for which the minimum lethal dose of the original toxin was 0.001 c.cm. would survive 5 c.cm. of this new product, which he has termed "anatoxin." Though its toxic property is thus attenuated, its value as an antigen appears to remain high. Ramon found that with a first dose of 0.5 c.cm., and a second, fourteen to twenty-one days later, of 1 c.cm., a third dose was rarely necessary. In 80 per cent. of his cases no local reaction was observed; in 18 per cent. there was slight redness at the site of injection; and in 2 per cent. a slight general reaction occurred. No fewer than 40 per cent. of the cases inoculated gave a negative Schick reaction eight days after one injection; in five to six weeks 89 per cent. were negative; and in eight weeks 99 to 100 per cent. had become negative. The duration of this immunity has not yet been determined, but there appears to be no reason why it should not equal the duration obtained from the use of the toxin-antitoxin mixture. Renault and Lévy now employ for therapeutic purposes a dose of 2 c.cm. of anatoxin in place of 1 c.cm. of a toxin of 300 units titre, combined with 100 units of antitoxin.

CLINICAL MICROSCOPY OF THE EYE.

MR. BASIL GRAVES has presented two reports[1] to the Lang Clinical Research Committee of the Royal London Ophthalmic Hospital, Moorfields. The first is a summary, without details, of the various clinical results of the investigation of the microscopy of the living eye, which he began in 1920 when senior house-surgeon at Moorfields Hospital, and continued later as Lang Clinical Research Scholar there. He has sought to ascertain the principles underlying various effects, so that, by properly defining them, it should be possible to place the technique on a scientific basis so as to enable observers to detect and interpret fine clinical conditions. The investigations were concerned, among other things, with intraepithelial vacuolation of the cornea, exactly limited, in certain cases, to regions overlying conglomerate precipitates on the corneal endothelium. In opening a discussion in the Section of Ophthalmology of the Annual Meeting of the British Medical Association at Bradford,[2] Mr. Graves spoke of seeing the cylindrical beam in the normal aqueous fluid; he now mentions conditions where the visibility of this beam was pathologically increased—cases of simple retinal detachment in their later stages, and certain cases of apparent conjunctivitis in which this sign displayed the presence of intraocular disturbance. Other results include: the taking up of minute particles by the corneal endothelial cells on which inflammatory precipitates lie; and the vascularization of the cornea, in certain cases of interstitial keratitis, along the path of the entering nerves, the course taken by the new vessels being so precisely related to the nerves that, where the nerve divides dichotomously, the vascular loop may extend along one or other, but not both, of the two branches before it reaches the sharp turning point in the course of

[1] *British Journal of Ophthalmology*, October and November, 1924.
[2] BRITISH MEDICAL JOURNAL, October 25th, p. 756.

the tiny blood stream. Dealing with chronic primary glaucoma Mr. Graves suggests the possibility of atrophy of the iris sphincter muscle, with subsequent persistence of function of a normally active or overactive dilator muscle. He has some remarks, based on the supposition that patients suffering from acute, following on chronic, primary glaucoma may often be found to have been subject to long-standing symptoms, many of which can be justifiably referred to a heightened activity or increased sensitiveness of the sympathetic nervous system. He tried to ascertain whether patients who are doubtfully the subjects of primary glaucoma exhibit a greater tendency towards dilatation of the pupil by the sympathetico-mimetic drug *p*-hydroxy-phenylethylamine (tyramine) than do normal persons. Instillation of a solution into the conjunctiva did not lead to conclusive or useful results. Among the results of microscopy of the lens in the living eye were the finding of an accessory zone in certain eyes which in the past have received concussion injury; the migration of pathological changes with growth of the lens cortex; a change of the lens in cases of simple retinal detachment; and the manner of relaxation of the lens capsules in the process of accommodation, with the influence on their state of tension produced by local reflexes or by drugs. The second report is on a bilateral chronic affection of the endothelial face of the cornea of elderly persons. The report deals first with the very precise technique which is necessary to detect and identify this disease, which is described as presenting four classes or stages. It starts probably in the centre of the cornea and takes years to spread peripherally; early it does not impair vision, but later vision is reduced. The condition is mainly one of elevations of the endothelium towards the anterior chamber, possibly caused, it is suggested, by some local product of the metabolism of its own cells—a structureless hyaline product having properties analogous to those of the material composing Descemet's membrane. In a commoner type of the disease the endothelium shows fine granular or grained multiple refracting irregularities, causing a pattern like certain forms of beaten silver work, or a thin transparent membrane which has become crinkled. In a rarer type of the same disease the endothelial face of the cornea is likened to the greyness, the unevenness, and the hueless lustre of the surface of pewter which has become partly corroded, or to pitted asphalt sparsely bespattered with coarse sand. These appearances depend on the chosen methods of observation and illumination. In the fourth class or stage the overlying epithelium shows vacuolation which is subject to variations and remissions under some influence of uncertain nature; changes have been in progress in the epithelium whilst under observation, but the endothelial condition always remains stationary or insidiously becomes worse. In conclusion, Mr. Graves says that from the point of view of prognosis the disease, when widespread over the cornea, is serious; but that he has no knowledge of the ultimate fate of patients so affected. He knows no treatment which will arrest the disease.

THE PRINCIPLES OF SPA TREATMENT IN GREAT BRITAIN.

IN his presidential address to the Section of Balneology and Climatology of the Royal Society of Medicine on November 27th, Dr. W. Edgecombe of Harrogate exhibited for each of the nine principal British spas a list of the disorders in which its waters were said to be efficacious. The remarkable feature of the lists was their similarity. All the spas, from Bath in the west to Woodhall in the east, from Strathpeffer in Scotland to Leamington in the Midlands, proclaimed their virtues in the treatment of the same large groups of conditions. The whole nine represented their waters as efficacious in metabolic diseases, gout, and chronic rheumatic diseases. Every spa except one (Cheltenham) included arthritis among the conditions in the treatment of which it excelled, and every spa except one (Strathpeffer) made the same claim in respect to circulatory disorders. Dr. Edgecombe pointed out that either the claims were extravagant or were in the main true, in which case it must follow that there was nothing specific in spa treatment in this country. The information on which he had drawn for his lists was contained in the *Handbook of British Spas*, and although this was issued under the auspices of laymen it was based upon reports by the medical profession in each of the places. It was absurd to suppose that Bath and Harrogate, Cheltenham and Woodhall, were equally specific in the average case of gout, but they all claimed to treat gout with good results. He had been in communication with medical men in all the spas with the object of discovering how much experimental work had been done, and it was rather remarkable that—save in a few instances, notably Harrogate—very little such work had been done, and the results which had been obtained could not be said to point to a specific action in any one disease. The beneficial action attributed to spa treatment in this country must therefore, Dr. Edgecombe inferred, be due to certain general principles. The importance of spa treatment was in regulating tissue interchange which had been rendered abnormal by excessive or deficient intake or output, by lack of exercise or fresh air, or by the action of poisons, chemical or bacterial. Broadly speaking, there were three forms of treatment applicable in these cases: (1) the anabolic type, where the aim was to build up the deficient metabolism, as in convalescence after acute diseases, anaemia, and general debility; (2) the metabolic type, where the metabolic process was faulty (without being necessarily excessive or deficient), as in functional disorders of the liver; and (3) the katabolic type, in which the treatment was directed to promoting overstimulation of the metabolic processes, as in the obese, the overfed, and the underexercised. These principles could be carried out equally well at most spas which had the necessary equipment. Certain differences in the waters as well as in the climate and geographical situation must be considered, but the principles remained the same. It was true that these principles were capable of application at home by drugs and other measures, but the home treatment lacked the concentration which was possible at the spa, there was not the same wide choice of physical procedures, nor did the patient have the advantage of change of scene and climate, removal from business, and opportunity of rest and exercise. Dr. Edgecombe concluded by saying that in the present state of knowledge no claim could be made to the successful treatment of chronic diseases as the result of the specific action of the mineral waters and baths of Great Britain, but, rather, stress should be laid upon the fact that these diseases were treated at the various spas on such broad general principles as he had sketched. The physicians at spas also should regard themselves as general physicians, making use largely of physical methods, but having all the resources of the general physician at their command, rather than as spa physicians, putting their faith in a specific action of certain waters, which action was as yet unproved. In the course of some remarks following the address Dr. R. Pierret of La Bourboule urged that, whatever might be the case with British spas, certain French spas had a specific value, although he admitted that there were many others, especially in the east of France, as to which no such claim could be made. In France, however, it was felt that the great progress made at many spas was due to their specialization. He instanced Royat (where the waters were rich in CO_2), which specialized in cases of high tension, although other heart cases must not be sent there. Again, in the thermal sulphur waters of the French Pyrenees a special action was indicated.

THE PRACTITIONER AND THE STATE.

IT is interesting to note that newly qualified practitioners and senior students are now alive to the fact that the universities and medical schools do not equip them very satisfactorily, if at all, with a knowledge of the conditions in which actual practice is carried on, and of the relations of the practitioner with administrative systems such as that of National Health Insurance. In the last number of the *Queen's Medical Magazine* of Birmingham University a short article voices this criticism with some emphasis. It is true that a mere admonition to exercise care in the issue of certificates and in the attention paid to the reading of regulations is not enough; for, as the article points out, these are so numerous that unless a man has the counsel of some experienced person well versed in their working he is bound to make mistakes. Such mistakes may entail serious consequences both upon the practitioner who makes them and upon the practitioner for whom he may be acting as deputy or assistant. It is not only in connexion with National Health Insurance that instruction is needed. The statutory obligations of a registered medical practitioner are increasing year by year in other directions also, and although experience alone can bring full knowledge of these obligations and their effects on practice, it has become highly desirable that some acquaintance with them should form part of the equipment of every newly qualified practitioner.

HISTORY OF WESTMINSTER HOSPITAL.

IT is appropriate that the renovation of the Westminster Hospital, which was commemorated by a service in Westminster Abbey on July 15th last, should be marked by Mr. W. G. Spencer's compact and admirable book *Westminster Hospital: An Outline of its History*.[1] The basis of this history is the collection of more than sixty volumes of the minutes of the house committees and general boards of governors, and thus the subject-matter has been dealt with under the four headings of the changes in the neighbourhood of the hospital; an account of the hospital since its establishment in 1721, when there were only two general hospitals — St. Bartholomew's and Guy's — in London; the nursing under the old system and since the time of Florence Nightingale's reforms; and an account of the visiting staff. As Westminster was originally a marsh around the delta of the opening of the Tybourne into the Thames, there is an interesting account of this now hidden stream; it is in keeping with the fascinating story of the antiquities and historical connexions of this part of old London. The transformation of the once ill drained and malarious district into a healthy centre of active business is also traced. The first home of the Westminster "Infirmary for the Sick and Needy," as it was originally termed, was in Petty France, but in 1724 it moved into a larger house, and again in 1734, after a dispute which led to a split-off and the establishment of St. George's Hospital in Lanesborough House at Hyde Park Corner. The third home of the Westminster Hospital contained seventy patients, and lasted until 1834, when the present building was opened. Just before the war there were discussions and various proposals for the sale and removal of the hospital and its amalgamation with St. George's, but these fell through. The account of the visiting staff is a mine of curious information, including much about the manners and customs of the time. In the early days of the hospital two classes of surgical cases were of outstanding prominence: stone in the bladder was very common in boys until the middle of the last century, and bone disease, septic or tuberculous, was a prolific source of amyloid disease. John Douglas, appointed lithotomist in 1721, and Cheselden in 1724, were rivals, and a description of their relations and of Douglas's initiation of the suprapubic operation is a useful footnote to history. Of the latter it is remarked that "no surgeon or anatomist of the first rank can ever have surpassed Cheselden in confused and inexact statement." The record for attachment to the hospital belongs to William Lynn, who, entering as the apothecary's pupil in 1775, was surgeon from 1787 to 1834, when, at the age of 81, he was finally induced to retire on condition that his son should be appointed extra fourth surgeon; of the younger Lynn it is recorded that in 1838 he "successfully removed a loose cartilage from the knee-joint," the specimen being preserved in the museum. The final chapter deals with the renovated hospital, and forms a fitting conclusion to a story full of incident and pleasantly told.

[1] *Westminster Hospital: An Outline of its History.* By W. G. Spencer. London: H. J. Glaisher. 1924. (Demy 8vo, pp. 120; 3 plates.)

INTERNATIONAL SURGICAL CONGRESS, 1926.

THE seventh congress of the Société Internationale de Chirurgie will be held in Rome from April 7th to 10th, 1926. The subjects for discussion include the following: radium treatment of cancer of the uterus; treatment of cerebral tumours; surgery of the spleen; abscess of the liver; and the later sequels of the treatment of Jacksonian epilepsy. In connexion with the congress excursions will be arranged from April 1st to 15th to Milan, Padua, Venice, Bologna, Florence, Genoa, Pavia, and Turin. Inquiries should be addressed to the secretary-general of the society, Dr. L. Mayer, 72, rue de la Loi, Brussels. In view of the great attraction of Italy and the world-wide reputation of Italian surgeons, many visitors are expected from various countries. The last congress was held in London in July, 1923, under the presidency of the late Sir William Macewen, at that time President also of the British Medical Association. The congress was opened by the Prince of Wales, and Sir William Macewen's presidential address, on the study of nature as shedding light on the structure and functions of man, was published in full in our issue of July 21st, 1923 (p. 91).

VISIT TO ENGLAND OF THE INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA.

A DINNER was held at Claridge's Hotel last week, at the invitation of Mr. Philip Franklin, F.R.C.S., in connexion with the proposed visit to England next June of the Inter-State Post-Graduate Assembly of America, which is directed by the Tri-State District Medical Association. The guests at the dinner included the American Ambassador, Lord Desborough, the President of the Pilgrims Society, the Presidents of the Royal Colleges of Physicians and Surgeons, of the Royal Society of Medicine, and of the Fellowship of Medicine, and Dr. Bolam, Chairman of the Council of the British Medical Association. On July 19th (p. 135) we gave such information about this coming visit as was then available, and it is now possible to add some further details. The itinerary arranged is as follows: June 1st to 7th, London; 8th to 10th, Manchester, Liverpool, and Leeds; 11th to 12th, Dublin; 13th to 14th, Belfast; 15th to 16th, Glasgow; 18th to 19th, Edinburgh; 20th, Newcastle. The opening ceremony of the tour will be held in London on June 2nd at 10 a.m., in the Barnes Hall of the Royal Society of Medicine, when the Duke of York will be present. A series of short lectures will be given at the Royal Society of Medicine on the mornings of June 2nd, 3rd, and 4th, and the President of the Royal College of Surgeons will hold a reception at the College on June 5th, from 4 to 6 p.m. Thirty-six London hospitals and medical institutions are co-operating, and a programme committee has been formed with the following secretaries: Dr. Arthur Ellis (medical); Mr. Girling Ball and Mr. H. W. Carson (surgical); and Dr. Eric Pritchard, secretary for special departments.

NINETY-THIRD ANNUAL MEETING
of the
British Medical Association,
BATH, 1925.

BATH ABBEY.

THE ninety-third Annual Meeting of the British Medical Association will be held at Bath next summer under the presidency of Dr. F. G. Thomson, physician to the Royal United Hospital, Bath, and consulting physician to the Royal Mineral Water Hospital, who will deliver his address to the Association on the evening of Tuesday, July 21st. The sectional meetings for scientific and clinical work will be held, as usual, on the three following days; the twelve Scientific Sections will meet for discussions and the reading of papers in the mornings, and some of the afternoons will be devoted to clinical, laboratory, and balneological demonstrations. The names of the Presidents of Sections were given in a Current Note published in the SUPPLEMENT of November 22nd, and the full list of officers, together with other details of the arrangements for the Annual Meeting, will appear in subsequent issues. The Annual Representative Meeting, for transaction of medico-political business and discussion of the internal affairs of the Association, will open at Bath on Friday, July 17th. On the last day of the meeting—Saturday, July 25th—there will be excursions to places of interest in the neighbouring West Country. We publish below the first of a series of descriptive and historical articles on Bath. The British Medical Association last met in that city in 1878.

SOME NOTES ABOUT BATH.

BY
JOHN HATTON,
DIRECTOR OF THE HOT MINERAL BATHS.

So much has been written about Bath, more perhaps than of any other city except the world's great capitals, that it is difficult to say anything new. But some old tales will bear re-telling, and the story of the city chosen for the Annual Meeting next July is full of human interest.

Why at this particular spot alone in all England half a million gallons of hot water well up every day from unknown depths no one seems quite able to explain. But for this Bath would, there can be little doubt, have been only another small cloth-weaving town like so many in the West Country. The beauty of its situation alone would never have attracted the Romans, and if the waters were not the only attraction for the fashionable crowd of the eighteenth century they provided, at any rate, a decent excuse for going to "the Bath."

We may perhaps picture the man of the Stone Age finding his way from the caves of the Mendips through thick forest to the swamp of the Avon valley, and bathing his diseased or injured body in the hot springs. We may be fairly certain that the Neolithic dwellers on the downs around Bath used the mysterious waters; indeed, Sir Norman Lockyer has suggested that a temple dedicated to sun worship stood on the site of the present Abbey.

Bath in Roman Times.

But with the coming of the Romans we are on surer ground. Even from the altars and other inscribed stones, and the well preserved fragments of the temples, it is not difficult to deduce that Aquae Sulis was a place of importance in those early days. But it is in the remains of the magnificent Thermae—the best preserved monument of Roman civilization this country possesses—that the real character of Roman Bath can be traced.

In one of the stories in *Puck of Pook's Hill* Rudyard Kipling has vividly re-created the life and spirit of this Roman health resort: "The best baths in Britain—just as good, I'm told, as Rome," says Parnesius, centurion of the Thirtieth Legion—for Aquae Sulis was no common camp, no mere military outpost, but a famous and fashionable spa even in the First Century—"and the generals come through the streets with their guards behind them, and the magistrates come in their chairs with their stiff guards behind them and you meet fortune-tellers and goldsmiths, and merchants, and philosophers, and feather-sellers, and ultra-Roman Britons, and ultra-British Romans, and tame tribesmen pretending to be civilized, and Jew lecturers, and oh, everybody interesting." And by the way, how very little things have changed—but that is another story.

In other places defensive wall and military camp show the sterner side of the Roman occupation, but it is at Bath alone that one can see something of the luxurious life of a Roman health resort.

The Baths of Bath To-day.

And still, getting on for two thousand years after the Romans built their great baths, the hot springs of Bath are being used—and used with ever-increasing success—in the treatment of disease. A greater, as well as a more scientific, Bathing Establishment has succeeded the Thermae of the first century. Those Roman officers who recorded their gratitude in votive altars to the goddess of the springs would have been lost in amazement at the equipment of the bathing establishment of the present day; at the many varied douches, at the throat and nasal sprays of atomized mineral water, the inhalation of the radio-active gases of the springs, and at the many forms of electrotherapy employed in conjunction with the baths.

The deep baths would seem familiar, for they differ only in detail from the individual immersion baths of Roman times; and the preliminary use of some kind of heat treatment, now so often prescribed, is only a more scientific

form of the Roman sudatorium; and large and well equipped as the modern swimming-baths are, they can hardly claim the architectural magnificence of the Great Roman Bath.

Just as the life of Roman Bath centred around the springs, so the Pump Room is the rendezvous of those who come to Bath to-day. From a recess at one end of this handsome Georgian room there looks down on the water-drinking crowd a statue of Beau Nash, that remarkable man to whose peculiar genius Bath owes, in a great measure, its wonderful renaissance in the eighteenth century.

Bath Abbey.

Of the long period between the destruction of Bath by the Saxons in 577 and the building of "that beautiful city which charms even eyes familiar with the works of Bramante and Palladio" there is little visible evidence, except, of course, the Abbey and some fragments of the mediaeval city wall.

The Saxon Abbey in which Edgar was crowned King of England has disappeared, and only a few fragments remain of the Norman cathedral which took its place. The King's Bath is probably the direct successor of the bath built by John de Villula, that great bishop and physician who rebuilt the Abbey, "restored the citizens' houses, and became the refounder of Bath, raising a new city out of the ashes of the old" after its destruction in the unsuccessful insurrection when William Rufus became king.

THE ROMAN BATHS OF BATH.

The present Abbey, begun in 1499, was "the last complete ecclesiastical building erected before the Dissolution," and although the late Perpendicular style may be criticized, there is a dignity and quiet beauty about this noble church which impress one with a sense of fitness not always felt when a great piece of Gothic architecture is surrounded by buildings of classical design.

Georgian Architecture.

Architecturally Bath is a Georgian city; rather it may be called *the* Georgian city, for nowhere can eighteenth century architecture and town planning be seen in such perfection. Its handsome streets and such magnificent buildings as the Royal Crescent, the Circus, Queen Square, Pulteney Street, and the Parades are a monument to the genius of the architects of the eighteenth century and the delight of every visitor of taste. The skilful architects who designed these stately edifices realized equally the natural beauties of the situation and the possibilities of Bath stone as a building material, and their work gives Bath to-day a unique charm comparable only to some of the cities of Italy.

Bath has touched English history, and especially English literature, at so many places that everyone seems to find, somewhere in the city's story, some point of personal appeal. On many of the houses once occupied by notable men and women of the past the Corporation has placed mural tablets, and the pleasure of strolling through the old-world streets is immeasurably enhanced by these bronze records of the many people famous in literature, art, and science who have made Bath their home.

Great Names of the Past.

Turn where one may the city is eloquent of the past. In a house in the Circus, which has been justly described as "the finest piece of architecture of its kind in Europe," the Earl of Chatham resided during some of the most eventful years of his life; in another Gainsborough painted some of his most famous pictures; there Lord Clive lived, and there Sir William Parry, the Arctic explorer, whose father was one of the great physicians of his day; there Thackeray sojourned, and there David Livingstone. In the Royal Crescent, "the finest crescent in the world," and the masterpiece of its architect, John Wood the younger, lived Christopher Anstey, the author of that amusing satirical work, *The New Bath Guide*; Sir Isaac Pitman, the inventor of phonography; and that great writer and publicist Fredric Harrison.

Fanny Burney, the authoress, who is buried in a Bath churchyard, lived in Gay Street, as did John Wood, jun., the architect to whom Bath owes many of its finest buildings. In this street, too, lived William Hoare, the artist, and Mrs. Thrale, for many years the friend of Samuel Johnson, who often visited Bath.

Bath was the early home of Rajah Brooke of Sarawak, and here Admiral Phillip, the first Governor of New South Wales, spent the closing years of his life. Wolfe was dwelling here when he received the dispatch which sent him forth to be the hero of Quebec.

Jane Austen is indissolubly associated with Bath. Dickens has not only laid here some of the most amusing scenes of *Pickwick Papers*, but it was when staying in Bath that the character of Little Nell in the *Old Curiosity Shop* first dawned upon the genius of the great novelist. Macaulay stayed in Bath, and here Lytton wrote a portion of *The Parisians*. Here Wordsworth at one time dwelt, and Southey, Oliver Goldsmith, and Walter Savage Landor. From Bath Lord Chesterfield wrote some of his famous letters to his son, and here James Quin, the actor, spent the evening of his life, knowing "no better city for an old cock to roost in."

Herschel was an organist in Bath when he discovered the planet Uranus. In Bath Byron's parents met and married, and "in Turkish costume at a masquerade" we find the poet himself in his earlier years. It was at the old Bath theatre (now an unusually interesting Masonic hall) that Mrs. Siddons laid the foundation of her fame, and a mural tablet marks her house in the Paragon. Sheridan has perpetuated the Bath in which he wooed the beautiful Elizabeth Linley, and where he gathered the material for the finest among English comedies; and here Henry Fielding wrote his famous novel and found in Ralph Allen "the Man of Bath," the personage destined to immortality as "Squire Allworthy" in *Tom Jones*.

Parks and Gardens.

Among the city's greatest charms are its many parks and gardens. The Royal Victoria Park, a noble domain of nearly fifty acres, with a fine avenue and a carriage drive a mile and a quarter in length, contains one of the finest collections of trees in the kingdom, and in the

Botanical Gardens is a beautiful and varied collection of rock plants. The Sydney Gardens, at the end of Pulteney Street — "the most dignified and perfect town street I know," says Professor Reilly—were the Vauxhall of Bath in the eighteenth century, and still form the venue of open-air concerts and entertainments, while during the summer season visitors now "take the waters" in the North Parade Gardens, famous as a social rendezvous when Harrison's Rooms, which stood where the Literary Institution and Museum is now, were the centre of that outwardly decorous gay world of which Beau Nash was king.

During recent years there has been a great development in the use of these parks and gardens. Tennis courts, bowling greens, and miniature golf courses, garden concerts and dances, and facilities for obtaining refreshments have all helped to bring people more into the open air.

Another feature of Bath is the ease with which one can, even from the centre of this city of 70,000 inhabitants, pass into pure unspoilt country.

"It is," to quote Frederic Harrison, a great lover of the city, in which he spent the last years of his life, "this rural element of Bath which makes the city a true *urbs in rure*. He who leaves his house on foot passes in a few yards to a true country walk, and as he strolls along the avenues and up and down its hillside, on East or West, on South or North, he has before his eyes, at every turn, a vision of that Wessex country-side above him—villages, farms, pastures, and woods. It is such a city as a few centuries ago was common enough in Europe. . . . Within a mile or two he may find avenues of noble forest trees, or paths beside a winding river, a picturesque hill village, quaint remnants of Tudor, Plantagenet, or Norman work, an ideal Tudor manor, the site of a Cromwellian battle, a fragment of Roman road, a Saxon relic, a prehistoric earthwork, and on every side a down with a panoramic view. There is more than one such haunt within an hour's walk of the Abbey, where, at a height between 700 and 800 feet, there may be found a prospect covering some forty or fifty miles of the West Country, which in rural beauty, extent of outlook, and historic associations, will hold its own with any other famous 'view point' in all the south of England."

ABBEY CHURCH, BATH.

But it must be left for a future article to give some account of other places of interest in Bath and of the countryside around.

Nova et Vetera.

THE GREAT PLAGUE IN LONDON.

THE Great Plague of 1665 in London is the most tragic event in the history of England's metropolis. In literature Defoe's *Journal of the Plague Year* is a story so lifelike that it has often been read as a real chronicle, though it is only a great work of fiction based on fact, just as was his *Robinson Crusoe*. Pepys, as we know from his Diary, lived on throughout the whole terrible year in the stricken city, from which a great proportion of the better-off population had fled, and every reference he makes to the Plague has been conned with inquiring interest. Contemporary medical writings on the subject are very scanty, partly because many doctors—including even Sydenham—went into the country, to which most of the better-class patients had also departed; and partly because, even if they had remained, ignorance of the nature and causation of the pestilence was so profound, and conceptions of its control and prevention so mistaken, that their writings though no doubt of antiquarian interest, would have had little value.

Now, however, Mr. Walter George Bell, the well known author of various valuable works on London—the Great Fire, the Tower, etc.—has written a full history of the Plague.[1] Such research has never been devoted to the subject before. Indeed, every fact and detail in his enthralling story is so carefully authenticated that he feels it necessary to apologize for the number of his footnotes, lest any reader should think they savour of pedantry.

The deaths from plague recorded in the Bills of Mortality begin with May, 1665, and quickly climb up to a maximum in September, when they reached 7,000 in each of two weeks. The Duke of Albemarle, however, told the French Ambassador that in one of these weeks they were really 14,000, without including Quakers, "buried in their gardens." According to the Bills the deaths diminished as quickly as they had increased, and the epidemic chart ends with March, 1666. The total recorded deaths were 97,306, but Mr. Bell rightly contends that there were many thousands more. Statement of the cause of death lay with the "searchers," old women, illiterate, ignorant, and habitually dishonest, usually paupers whose small income from their office helped to relieve the parishes of the burden of their upkeep. Such women would be willing for a trivial bribe to report some other cause of death than plague. The evidence of under-statement is to be found abundantly in the great excess of deaths set down to other causes in the plague period as compared with normal times.

London's population was estimated by Graunt as not above 460,000 in 1665, and even that number was greatly diminished by the flight of a large part of the better-off inhabitants, including the Court of Charles II, so that Mr. Bell concludes that all who were left can have little exceeded 350,000. He holds, indeed, that of those who remained after the more prosperous had fled, "almost one out of every three of

[1] *The Great Plague in London in 1665.* By Walter George Bell, F.S.A., F.R.A.S. London: John Lane, the Bodley Head, Ltd. 1924. (Demy 8vo, pp. 374; 30 illustrations. 25s. net.)

London's populace perished." "The Poore's Plague" is the name by which it came to be generally known, the poor being the class who were unable to escape from its ravages. With obvious restraint, and none the less strongly on account of his restraint, the author animadverts on the flight from the stricken town of many whose duty it specially should have been to remain to help or comfort those for whom there was no escape. "The divines and doctors from whom a good example might have been expected were not the last to leave," and the author of *London's Dreadful Visitation* expressed the hope that in a like emergency "neither the physicians of our souls or bodies may hereafter in such great numbers forsake us." Yet many remained, and not a few of these, both ministers and doctors, lost their lives in tending the victims of the epidemic (especially many dissenting ministers who had been subject to persecution under Charles II) and became "martyrs to the duty they accepted without flinching when the courage of others failed"; while on the other hand the fugitive vicar of Cripplegate "lived to take the Bishopric of Gloucester." The King and Court, however, did not fly precipitately first to Hampton Court and later to Oxford; but as regards the tradition that Charles subscribed a £1,000 weekly during the Plague in addition to £600 by the City, Mr. Bell writes that the cold fact is that the sums distributed over the whole area fell very short of this, and that charity was the mainstay. But the splendid work done by the Duke of Albemarle on behalf of the King, by Lord Mayor Lawrence, and by aldermen, is freely testified to in the course of the book.

The volume demonstrates anew the utter want of knowledge of the nature of plague infection, and the hopelessly mistaken policy which was adopted for its control. The shutting up in their own dwellings of all the inmates of every infected house, with the barring of egress except in response to the daily call "Bring out your dead," was responsible for mortality to a degree which cannot be estimated. It was only towards the end that pest-houses were being proposed, and, of course, only a hopelessly inadequate provision could be made. The futile burning of fires in the streets was the other main feature of preventive efforts. The epidemic had been heralded by marvellous appearances in the heavens—blazing stars, comets, flames of fire, a coffin in the clouds, the conjunction of Mars and Saturn. Quackery abounded in remedies which did not prevent the quacks themselves from falling victims.

In discussing the causation of the Great Plague, after telling his readers about the *Bacillus pestis* and fleas and black rats and grey rats, the author says it is not necessary to look abroad for the origin of the epidemic. For generations and centuries plague had existed in London. Without dogmatizing, he calls attention to the phenomenal climatic conditions of 1665 in respect of unprecedented drought from December, 1664, to August, 1665. As regards the cause of the subsidence of plague before it had attacked the whole population of the amazingly insanitary city, the same question might be asked with respect to every epidemic disease. But in referring to plague prevalence in England generally about the time of London's visitation, Mr. Bell makes a remark of epidemiological interest respecting Nottingham, which was the last place attacked by the epidemic. The disease appeared there in 1667, and the notable point is that it must have been then of an unusually mild type, as the year's burials in Nottingham were only 55 above the average, so that the identification of the outbreak with bubonic plague is, he thinks, not quite convincing. The same doubts, it need hardly be noted, are at the present time occasionally being expressed with regard to the nature of the mild prevalent small-pox, though there is practical unanimity of skilled opinion that the disease is genuine variola.

Space forbids further account of Mr. Bell's volume. To much of its contents we have made no reference, but from beginning to end it is equally interesting and important. Indeed, it is a book of the greatest value both to the profession of medicine and to the reading public. An ample index facilitates reference to every part of its contents, and its illustrations are appropriate throughout.

THE ROYAL SOCIETY.

ANNIVERSARY MEETING.

THE 262nd anniversary meeting of the Royal Society was held on December 1st, when Sir CHARLES SHERRINGTON was in the chair and delivered the usual retrospective address. He began by referring to the Fellows who had died during the year; they included Professor Symington of Belfast; Sir William Macewen of Glasgow, described as a brilliant surgeon who advanced scientific surgery; Professor S. G. Shattock, of whom it was said that he was "a great and ordered storehouse of knowledge on pathology"; Sir William Bayliss, "a lovable and ideal colleague . . . one of the key figures maintaining the physiological endeavour of our time"; and Dr. Sidney Martin. After a brief reference to the share the Society had taken in organizing an exhibition of pure science in the Government buildings at Wembley—an exhibition designed to bring before a wide public the meaning and importance of scientific research—Sir Charles Sherrington said that the third research professorship provided from the munificent gift of Sir Alfred Yarrow had been filled by the appointment of Professor O. W. Richardson, whose original contributions to science had been remarkable for their variety, their amount, and their value; the most important, perhaps, was that connected with the emission of electrons from hot bodies. Like other Yarrow professors, he will continue to work in the laboratory from which he has published a large part of his best work, and will supervise a certain amount of graduate research work.

Medals.

The President announced that the Copley medal had been awarded to Sir Edward Sharpey-Schafer. Of him the President said:

"Sir Edward Sharpey-Schafer's work, extending from 1874 to the present time, has illuminated many parts of physiology, and the field of microscopical anatomy no less. His earlier experimental researches dealt with the functions of the different parts of the brain, and with the anatomy of the paths of conduction in the central nervous system. In 1894 he discovered, in conjunction with Dr. George Oliver, the remarkable effects of intravenous injection of extract of the adrenal gland, tracing their source to the small medullary portion of the gland, and furnishing in regard to the mode of production of the effects an outline analysis which has since then undergone extension rather than revision. This research proved the starting point for a great volume of work, still fraught with consequences of extreme importance to physiology and medicine. This work on the adrenal was followed by somewhat similar work on another ductless gland, the pituitary, which opened a modern chapter of physiological knowledge of that organ, again with important consequences to medicine. In 1909 he gave the Croonian Lecture, on 'Functions of the Pituitary Body.' Reverting to his researches in microscopical anatomy, they have been wide and numerous, ranging from demonstration of the nerve-net in the swimming bell of Medusae to the development of the cells of the blood, the intimate structure of muscle-fibres, and the mode of absorption of fat by the intestinal epithelium. All this large volume of original work, produced unremittingly through many years, and containing outstanding discoveries in regard to what, following his own term, is now known as endocrinology, has constituted a great and singularly fertile advance in natural knowledge."

A Royal medal has been awarded to Dr. Henry Hallett Dale, Director of the Department of Biochemistry and Pharmacology under the Medical Research Council. Of him it was said:

"The high value and importance of Dr. Dale's researches is illustrated by that series of them whose starting point was an inquiry into the action of ergot. Working with successive collaborators, he showed that histamine, an amine derived from ergot by decarboxylation of amino-acids, produces a condition resembling wound shock and toxaemic collapse. By analytic experiments he succeeded in establishing that histamine, while causing spasm of arterial and visceral muscle, conversely paralyses the active contraction of the capillary blood vessels; and this analysis was reached at a time when the property of contractility of those vessels had not been generally recognized. He showed that their paralysis is the dominant feature in the shock and is responsible for a virtual breakdown of the whole blood circulation. The contractility of the capillary wall was thus revealed as a prime factor in the local regulation of blood supply, and as essential to the very mechanics of the circulation. He has shown further that in histamine 'shock' we have a paradigm for the shock effect of a large class of protein poisons, and also for the grave condition known in medicine as secondary surgical shock, toxaemic collapse, and anaphylactic shock. The work has thus furnished a fresh key both for study of the normal circulation and also for the problem of a baffling pathological condition. In regard to anaphylaxis and

immunity he has further been able to give final proof that the anaphylactic response is due to a fixation of antigen, not, as had been supposed, in the blood or other tissue fluids, but within the cells themselves."

Right-side-upness.

In the course of his address the President adverted to the work of Professor Magnus and his collaborators at Utrecht. Their admirable research in nerve physiology carried on during the past fifteen years had recently been brought to an approximate completion. Its field, the President continued, has lain in nervous mechanisms which, though the highest part of the brain can have touch with them, can yet of themselves work wholly reflexly and separably from mind.

A number of simpler acts, studied for the most part in lowlier animal forms, have, of course, long been known to stand in that relation to the higher brain. But the Utrecht researches prove a like relation, and, in the superior mammals, for acts surprisingly complex—the assumption and maintenance of the erect posture of walking, running, and so forth in all their ordinary completeness. Not only have Magnus and his colleagues observed this, but they have analysed the reflex processes by which these acts are thus accomplished. They have traced the seat and nature of the stimuli at work, the principles of the co-ordination of the nervous arcs and muscles involved, and indeed all the mutual interaction which grade and secure the nicety of adjustment exhibited in such complexity.

Plant growth orientates itself in regard to the line of gravity, geotropism; and so in the rabbit, cat, and monkey, standing, walking, running, with their element in common, the erect attitude, are shown by Magnus and de Kleyn to be, shortly said, refined geotropic reflexes. Any position other than the erect one excites in the reflex animal restoration of its erectness. The head, for instance, is righted by an act having its unconscious source in the pull and pressure of two microscopic stones in the special pair of tiny gravity organs bedded in the skull. With righting of the head goes rotation of the eyeballs in the opposite sense, keeping the vertical meridian of each retina in correspondence with the actual vertical. Appropriate reflexes bring the whole animal from any other position into the symmetrical right-side-up one. The well known manœuvre which enables the cat, when inverted and falling from a short height, to right itself in the air during its fall, alighting squarely on its feet, is shown by Magnus and his colleagues to be executed perfectly by reflex action, after removal of the entire higher brain. Detailed analysis proves this whole reaction to be a chain of reflexes again essentially geotropic.

Following these researches, the President said, we see that it is less true to say that the higher animal under direction of its mind keeps itself right side up, than to say that the animal body by automatic mechanism is kept right side up. From the animal's point of view, as a sentient being, for it to be right side up to the world is, of course, for the world to be right side up to it. In other words, the body's automatism ensures that the mind looking, so to say, out from the body, finds the world right side up. By the Utrecht researches that relation is shown to be maintained by processes as non-mental as is digestive secretion of the bile. Hence, this right-side-upness being settled without mind, and indeed prior to mind, and naïve mind being, whatever else it is, utilitarian, the situation has not invited consideration from naïve mind. Mind has not needed, so to say, to think about a relation already existent and given it from the outset. Professor Magnus's researches enable us, therefore, to trace how, in the make-up of mind, right-side-upness of the world comes as an innate unargued datum, an immediate intuition, and therefore largely eludes mental analysis, there being no direct sense experience of its origin or elemental processes, although confusion in mental space when its elements conflict. William James, with characteristic picturesqueness, wrote that our "prehistoric ancestors discovered the common-sense concepts," among them what he termed "one-space." With that we may set "world right-side-upness"; but as for dating its "discovery" to our prehistoric ancestors, it, as an immediate intuition, must date back, not to the merely prehistoric, but to the entirely prehuman.

ANNIVERSARY DINNER.

The anniversary dinner was held in the evening, when the PRESIDENT was in the chair. The Colonial Secretary, Mr. L. S. AMERY, proposed the toast of the Royal Society. It was, he said, on scientific development, more than on any constitutional scheming, that the future unity of the Empire in large measure depended, and quoted some illustrations; among others, the great field of research into health, especially in tropical countries, in which the Royal Society had done wonderful work. The Colonial Office, which, among its other responsibilities, was also, in some measure, a Ministry of Health over millions of square miles, was bound to be intimately interested in all the research work the Society carried on. The PRESIDENT, in reply, said that as science improved more fields opened up, so that the hands of the Society were always full. Among the encouragements of the past year had been the gift of £10,000 by an anonymous donor in India, to assist the Society in furthering medical research.

The toast of "The Medallists" was proposed by the PRESIDENT and acknowledged by Sir E. SHARPEY-SCHAFER, and that of "The Guests," given by Sir WILLIAM BRAGG, by Lord SUMNER.

THE OPIUM QUESTION AND THE LEAGUE OF NATIONS.

THE two conferences in regard to the traffic in opium and dangerous drugs referred to in the JOURNAL of September 13th and October 11th last have been in session at Geneva during the past month. At the sixth session of the Advisory Committee on opium last August a report of a "Preparatory Committee," dealing with the programmes to be laid before the two November conferences, was under consideration. While no definite agenda were approved for the earlier conference, concerned with restrictions on "prepared opium" or opium for smoking, an elaborate scheme was drawn up by the Advisory Committee as a basis for the deliberations of the second conference, dealing with the traffic in dangerous drugs, including some possible amendments in the International Opium Convention signed at the Hague in 1912. On August 29th the Fifth Assembly of the League adopted the report from the sixth session of the Opium Advisory Committee. It took note of ratification of the Convention by Switzerland, deplored the increased cultivation of opium in China, invited further consideration of the inclusion of Indian hemp in the Convention, and appointed Mrs. Zahle of Denmark to preside at the second and more important of the November conferences.

While fairly full reports of the proceedings of these two November conferences have appeared in the *Journal de Genève*, only brief summaries of the somewhat heated discussions have appeared in the English press. Two publications are now available to those interested in the details of this question (and can be obtained of Messrs. Constable and Co.)—namely, (1) a summary of information received from Governments with regard to the production and manufacture of raw opium and coca leaves, opium derivatives, and cocaine (1920-23), and (2) minutes of the sixth session of the Advisory Committee on traffic in opium and other dangerous drugs.

It is not quite clear what are the powers and purposes of the two Geneva conferences. They are summoned by the League of Nations, but include representatives of countries which are not members of that League, notably the United States. They do not appear to be full diplomatic conferences all of whose delegates are entrusted with *pleins pouvoirs* to act in the name of their sovereign powers; and it may be questioned how far they are competent to amend the Hague Convention of 1912. The co-operation of the United States lends special significance to the second conference, in view of the attitude hostile to the League of Nations hitherto adopted by the dominant party in the States. We share the regret of the *Times* that the representation of Great Britain and India should be confined to minor officials, and we may add our own regret that no medical member is included.

The results of the first conference, so far as they have been divulged, were apparently compromised by the diver-

gence exhibited between the British and Indian representatives on the one hand, and the Japanese on the other, regarding the right to discriminate against import certificates of dangerous drugs when these were not above suspicion. Eventually, it is reported, some agreement "in principle" was reached, and the conference adjourned. The second, larger, and much more important conference has been in session since November 17th, and marked divergence was soon disclosed between the representatives of the United States and of India. The American position is neatly formulated in the two principles:

"1. That if the purpose of the Hague Opium Convention is to be achieved according to its spirit and true intent it must be recognized that the use of opium products for other than medicinal and scientific purposes is an abuse not legitimate; and,

"2. That in order to prevent the abuse of these drugs, it is necessary to exercise the control of the production of raw opium in such a manner that there will be no surplus available for non-medicinal and non-scientific purposes."

The American delegates, led by Bishop Brent, who was president of the first of the Hague Opium Conferences, came armed with full plenipotentiary powers to strengthen the Convention of 1912 in parts where it had been somewhat weakened, largely to meet objections raised by Germany; they also desired to forbid altogether the use of heroin, which has been more abused and used by criminals in the States than is the case in Great Britain.

The American principles were regarded by the Indian delegates as infringing sovereign rights in regard to the internal or domestic production and commerce in raw opium, to threaten the custom of Government supplies of raw opium for eating by the natives of India, and presumably the revenue derivable therefrom. Matters came to a crisis on Monday last, when, by a vote of 26 to 1 (nine abstaining), the American view as to the competence of the Conference freely to examine the whole question of the production of and traffic in the dangerous drugs included in the Convention of 1912 was accepted.

Canada.

[FROM OUR OWN CORRESPONDENT.]

THE ANTITUBERCULOSIS CAMPAIGN.

TOWARDS the end of the war a determined effort was made by the Dominion Government to attack the problem of tuberculosis amongst returned soldiers. A group of consultants was appointed and use was made of the sanatoriums throughout the country already in existence. The work of caring for these patients has come under the Department of Soldiers' Civil Re-establishment. Up to the present time 10,000 ex-soldiers have received treatment; 8,654 are still living, and their care still remains a Federal responsibility. A total of 407 cases of tuberculosis were first diagnosed in the year 1923, and as their infection was considered to be due to active service these patients have been accepted by the Department for treatment.

Joint Conference.

At a joint conference in Ottawa of medical men engaged in this work, of the Ontario Laënnec Society and the Canadian Tuberculosis Association, special attention was directed to the difficult subject of the diagnosis of different forms of pulmonary disease. Amongst 500 cases of "D.A.H." (heart effort syndrome) Dr. Bond found only ten of undoubted tuberculosis. Several papers dealt with the *x*-ray findings in tuberculosis and other forms of disease of the lungs. Professor E. W. Archibald of Montreal discussed thoracoplasty in the treatment of cases of tuberculosis where collapse of the lung by means of artificial pneumothorax cannot be effected.

Canadian Tuberculosis Association.

This was the twenty-fourth annual meeting of the Canadian Tuberculosis Association, and Dr. C. D. Parfitt of Calydor Sanatorium, Gravenhurst, Muskoka, president of the association, has outlined the progress which has been made in the fight against the disease. At the beginning of the century there were only three sanatoriums, comprising less than 200 beds, in the whole of Canada. To-day there are 4,343 beds in eight provinces, one for each 2,000 of population, and fifty-six for each 100 deaths. Manitoba and Ontario have as many beds as there are deaths annually from this disease in these provinces. In 1901 the death rate from all forms of tuberculosis was 180 per 100,000 inhabitants, or 9,600 deaths for a population of 5,400,000, while twenty years later the death rate was 87, or 7,700 deaths for a population of 6,600,000. Thus in two decades the death rate has been reduced 52 per cent., the deaths have decreased 20 per cent. in actual numbers, while the population has increased 63 per cent. The general death rate from disease has declined for many reasons, but the antituberculous campaign can surely claim for itself a fair share of the credit.

Unfortunately all the provinces of Canada cannot be said to be putting forth a sufficiently strong effort in combating tuberculosis. Whilst in Saskatchewan the death rate is 43 per 100,000 (and this province is the most active), in Prince Edward Island it is 143—the province which is doing the least. In the province of Quebec the death rate is about 120, and, owing to the vacillating policy of the Provincial Government, one of the largest sanatoriums, that at Ste. Agathe, is lying idle and there are not nearly sufficient hospital beds to care for either the hopeless cases or for the more or less incipient ones. A hopeful sign has shown itself in Montreal in the recently formed Antituberculosis and Health League, which has a strong directorate representative of all classes of the community, with Sir Arthur Currie, Principal of McGill University, as its chairman, and Dr. Grant Fleming, who has had sixteen years' experience of public health work in Toronto, as permanent secretary. Lord Atholstan has given $100,000 for promotion of the work. It is understood that a pure milk supply and rigid inspection of meat are to be the first objects aimed at. Tuberculosis is rife amongst the French-Canadian population, even in the healthiest country districts. A wide campaign of education must be carried out, and this can most easily be done through the efforts of the Roman Catholic Church. When stimulated, the French-Canadian is not slow to adopt vaccination or to see the advantages of the antitoxin treatment of diphtheria. The Church has already done much in the fight being waged against venereal disease.

New South Wales.

[FROM OUR OWN CORRESPONDENT.]

CANCER RESEARCH.

THE Cancer Research Committee of the University of Sydney has been authorized by the Senate to appeal for £10,000 in order that work may be begun at once. It is proposed to spend this first £10,000 in the following ways:

(*a*) *Publicity and Educational Work.*—To instruct the public concerning malignant disease, its causes and prevention, and as to the results of research and treatment. This object will be attained by articles in the press, by public lectures and demonstrations, and by such other means as may appear desirable.

(*b*) *Provision of equipment* for the carrying on of cancer research at the University.

(*c*) *Establishment of special cancer departments* in conjunction with the Royal Prince Alfred, the Sydney, and the St. Vincent's Hospitals. These, being the teaching hospitals, will be dealt with first, but as opportunity and funds permit other hospitals in the metropolitan area and the country will be included.

(*d*) *Purchase of a special cancer library*, in order that all works dealing with the subject of malignant disease may be available for reference. A complete library will be a costly matter, but the formation of a nucleus is a paramount necessity.

(*e*) *Formation of a cancer bureau* at the University, to conduct administrative work done in the research laboratories and hospitals, to develop research work for the more effective prevention and treatment of cancer, and to give information to the medical profession and the public.

(*f*) *To extend the work generally* as seems best in the interests of the community at the discretion of the committee.

THE CHILDREN'S HOSPITAL, SYDNEY.

A new pavilion has been added to the Royal Alexandra Hospital for Children, Sydney, providing accommodation for 102 more children; the hospital now contains 340 cots, and is the largest and probably the best equipped hospital for children in the British Empire. The cost has fallen from £221.97 in 1922 to £181.4 per bed per annum. The

hospital had cost altogether (Dr. Clubbe stated) £200,000; towards this large amount the State had contributed only £20,000; the public had given £110,000, but the hospital was in debt to the extent of £70,000. In consequence of this large debt it has to pay every year £4,500 (£3,500 in interest and £1,000 to reduce the debt to the A.M.P. Society). It was estimated that the cost of the upkeep for the current year would be £65,000. The amounts received in 1923 totalled £61,286. If the work was to be carried on without curtailment it was clear that another £10,000 must be raised each year. From the public the institution received about four times as much as any other hospital in Sydney, but the Government subsidy was very much less than that of any other large hospital. If the public had given as much as it could, then the hospital must look to the State to make up the deficiency. The number of in-patients treated in the general hospital was 5,818, and of casualty and out-patients 12,664. In the out-patient department 21,478 were treated. The number of patients treated in the Convalescent Home was 148. Improvements could again be reported on the average duration of stay of patients in the hospital—fifteen days in 1923, as compared with twenty days in 1922. The mortality percentage, including all deaths occurring within twenty-four hours of admission, was 8.26, as compared with 9.67 in 1922. The following decennial figures show, perhaps more forcibly than any other manner, the remarkable expansion of the hospital:

	1893.	1903.	1913.	1923.
In-patients treated ...	359	657	2,378	5,818
Out-patients treated ...	978	5,292	16,992	34,142
Attendances	2,052	21,925	52,969	82,573

At the close of the year a dental department was established at a cost of £425, and a part-time dental surgeon appointed at an annual salary of £200. This department has proved a great success, no fewer than 1,038 children receiving complete dental treatment during the year.

Paris.

[FROM OUR OWN CORRESPONDENT.]

THE leaves fall and the congresses assemble. In this, our over-centralized land, Paris opens her maternal yet jealous arms to the rank and file of medicine.

Congresses.

The thirty-third French Congress of Surgery was presided over by Professor Tuffier. Of all our leaders he is perhaps the most popular with the English-speaking world, not only for his masterly work, but also because he is an excellent linguist and has done much to spread knowledge of the French school of surgery in Great Britain and in the United States. At the opening of the congress, Marshal Joffre sat beside the President, and expressed his gratitude for the medical work of our generation in the war. Though the Congress was primarily national an important delegation of Polish surgeons attended. The keynote of Professor Tuffier's address was the advocacy of the right and duty of the surgeon to dare to adopt new methods, even on man, and to assume the responsibility of breaking away from traditional lines when necessity arose. He also claimed that surgery should be taught practically, and that technical aptitude should be acquired from animal operations: without doubt his wishes will be fulfilled in the near future. The subjects discussed included the surgery of fractures of the upper end of the femur, the treatment of fibroma, pre- and post-operative management, and the choice of anaesthetics in intestinal operations.

On October 11th, Mr. Archibald Young, Regius Professor of Surgery in the University of Glasgow, presented to the French Association of Surgery an address of cordial greeting. On the same date was held the usual Congress of Urology, when a discussion took place on the treatment of the bladder, after the operation of nephrectomy for tuberculosis of the kidney.

In Bordeaux, that ancient city where still breathes the spirit of Montaigne, the Royal Institute of Public Health met in June. The Presidents of the Royal Colleges of Physicians and Surgeons were present; and our other distinguished English guests included Sir Thomas Oliver, Sir Ronald Ross, and Surgeon Vice-Admiral Chambers, D.G. R.N. The French representatives present included Professors Achard, Bezançon, Léon Bernard, and Courmont. It is not my intention to review the programme; let me rather draw attention to the warm atmosphere of cordiality instinctively breathed in such a gathering. Once again in the domain of science we plead for the noble cause of Franco-British collaboration. Mutual understanding grows out of mutual acquaintance; let this lesson be well conned by the younger generation. May Paris, our Alma Mater, with her new spirit, develop more and more her scheme for the furtherance of medical relations.

The Medical Curriculum.

Again has the medical curriculum undergone a change, the principal modification being that students will be required to pass an examination annually at the end of the summer term, and spend nine months in hospital each year, in a foreign hospital during their fifth year of study if they so desire. Theoretical and clinical work is to be grouped together and therapeutics now include an obligatory course of hydrology. This new scheme is certainly more simple and more thorough than the one it succeeds. Simultaneously a profound change has been introduced into the arrangement of the first competitive examination, which starts our students along the road towards hospital appointments. The antiquated *concours de l'externat*, which was a *viva voce* affair of ten minutes, a terrible loss of time for the unfortunate candidates, has been converted into a paper examination, mercifully anonymous, with fifteen short questions to be answered in an hour and a half. Fifteen questions on anatomy, medicine, and surgery allow a mere six minutes for each answer; surely this new programme is more likely to develop the talents of a telegraph operator than of an essayist.

Sanatorium for Students.

The National Anti-Tuberculosis Committee has just placed in position the first stone of the students' sanatorium, at a height of 3,500 feet, near Grenoble. Sixty beds will be provided, and the institution will be financed by the State and by voluntary gifts. A special feature is that facilities will be given for the patients to carry on their studies together with their cure.

England and Wales.

MEDICAL TRAINING OF WOMEN IN WALES.

THE annual meeting of the General Committee for the Promotion of Medical Training of Women, in connexion with the National School of Medicine for Wales, was held at University College, Cardiff, on November 24th. Mr. D. Lleufer Thomas, who was in the chair, presented the annual report, and pointed out that the Welsh National School of Medicine was essentially a co-educational institution. The committee had been in existence eight years, during which time approximately £2,000 had been distributed in grants and loans to students who received special help during the last three years of their course. Dame Janet Campbell, M.D., senior medical officer of the maternity and child welfare branch of the Ministry of Health, gave an address on the status and progress of women in medicine. She expressed the opinion that women were peculiarly fitted for certain branches of medicine, and she referred to the early diagnosis of cancer in women, and to

service abroad, particularly in China and India. She hoped that more women would enter into general practice in this country, and said that their work was highly valued in connexion with the Board of Education and the Ministry of Health.

PRESENTATION TO DR. E. W. HOPE.

Dr. E. W. Hope, who recently retired from the post of medical officer of health for the city and port of Liverpool after forty-one years' service, was entertained by the members of the Liverpool City Council on November 25th at a complimentary luncheon. Sir Archibald Salvidge, as leader of the council, presided; he was supported by the Lord Mayor and Lady Mayoress and a large number of representatives of the city of Liverpool. Lord Derby, in a message expressing regret at his inability to attend, said that he knew no public official more worthy of recognition from his colleagues than Dr. Hope. The chairman having proposed the health of their guest, the Lord Mayor eulogized Dr. Hope's work in connexion with tuberculosis, and added that his charming personality had made him a host of friends. Sir John Utting said that one secret of their guest's success was his magnificent organizing ability. Alderman Burgess referred to Dr. Hope's great work among the school children. The chairman presented Dr. Hope, on behalf of the members of the city council, with a handsome antique silver tray and tankard, both bearing suitable inscriptions, together with an illuminated framed copy of the resolution of appreciation recently adopted by the council. Dr. Hope, in his reply, expressed his deep appreciation of the honour conferred upon him by so representative a gathering, and thanked the chairman and the members of the city council for their splendid gifts. Later in the afternoon Dr. Hope received from the staffs of the various branches of the Liverpool Health Department an antique writing desk appropriately inscribed, a mahogany side table, and a mirror.

UNIVERSITY OF LEEDS: CELEBRATION WEEK.

The jubilee of the Yorkshire College of Science and the coming of age of the University of Leeds will be celebrated during the week beginning December 15th. On the previous Sunday a special evening service will be held in Leeds Parish Church, with a sermon by the Archbishop of York. The opening ceremony will be held on December 15th at 11 a.m. in the Great Hall of the University; at an afternoon reception at the Medical School an address will be given by Sir Berkeley Moynihan on "Medicine in Leeds"; in the evening a University Dinner will be held in the Town Hall. On December 16th there will be an official reception of delegates and presentation of congratulatory addresses from universities and learned societies; a luncheon given by the Lord Mayor of Leeds; a congregation for the conferment of honorary degrees; a reception by the Leeds Philosophical and Literary Society; and a public lecture by Sir Michael Sadler, Vice-Chancellor of the University from 1911 to 1923, whose portrait will be presented to him. On December 17th the Halls of Residence will be visited, and an evening conversazione will be held at the University. On the evenings of December 18th and 20th *The Student's Opera*, by Professor Garstang, will be performed in the Great Hall; and on December 19th the annual dinner of the Old Students' Association will be followed by a students' ball.

GIFT TO UNIVERSITY COLLEGE HOSPITAL.

Mr. Geoffrey E. Duveen has presented £50,000 for the construction and equipment of a new ear, nose, and throat hospital to replace the present Royal Ear Hospital in Dean Street, which, in 1920, was incorporated as the ear, nose, and throat department of University College Hospital. This gift is intended as a memorial to the donor's late father, Mr. H. J. Duveen, as was his gift of £15,000 last year to University College Hospital, which was reported in our columns of April 5th, 1924 (p. 651). In 1923 (November 17th, p. 947) we announced the acceptance of Mr. Geoffrey Duveen's generous offer to the University of London of £10,000 for the establishment of a lectureship in otology. These three gifts are designed to secure the provision of better facilities for treatment, teaching, and research in connexion with diseases of the ear, nose, and throat. Mr. Duveen states that he selected University College Hospital for this benefaction because it has already been chosen by the Rockefeller Foundation Trustees as the agency for their imperial scheme of medical education.

TREATMENT OF SEQUELAE OF POLIOMYELITIS IN CHILDREN.

The Minister of Health has directed attention in a circular[1] to the inadequacy of accommodation in London for the treatment of the after-effects of poliomyelitis in children and to the permanent crippling and deformity resulting from the lack of skilled and prolonged remedial measures during the later stages of this disease. It is pointed out that the relative rarity of poliomyelitis in London may cause the significance of early symptoms to be overlooked, the disease escaping diagnosis until paralysis of one or more limbs appears. A memorandum[2] has therefore been issued, which includes the following information. An account is given of the features of the disease, including its pathology, symptoms, and diagnostic points, and it is announced that the London County Council is organizing arrangements to provide hospital accommodation for children in the later and chronic stages of this disease. The services of Dr. J. A. H. Brincker and Dr. J. Graham Forbes are understood to be available in a consultative capacity in suspected cases on application to the Public Health Department of the County Hall. It is suggested in this circular that in view of the high proportion of cases which occur below the age of 5 orthopaedic treatment for these young children might be arranged as part of the metropolitan borough schemes for maternity and child welfare. The number of cases in any borough is generally small, and it is suggested, therefore, that the borough council should consider what can be done to promote early diagnosis, and also what arrangements can be made in co-operation with other authorities to provide institutional treatment with a view to preventing avoidable muscular weakness or permanent deformity. It is added that the attention of medical officers and health visitors engaged in maternity and child welfare should be directed to this matter, and that they should be asked to make such inquiries as are practicable in the course of their ordinary duties. The metropolitan borough councils are advised to co-operate with the London County Council in its present endeavour to provide prolonged treatment for children in the later stages of this disease. The County Council in its capacity as local education authority is also responsible for securing appropriate treatment for any cases of infantile paralysis in children of school age.

Ireland.

TERCENTENARY OF THE FOUNDER OF THE ROYAL COLLEGE OF PHYSICIANS, DUBLIN.

THE 300th anniversary of the birth of Dr. John Stearne, the founder of the Royal College of Physicians of Ireland, was celebrated on November 26th at the College, when an oration was delivered by Dr. T. C. P. Kirkpatrick, the registrar. In his address Dr. Kirkpatrick gave an account of the life of service of Dr. John Stearne, who was born on November 26th, 1624, in the house of his grandfather, James Ussher, then Bishop of Meath, but who in the following year was translated to the see of Armagh. Stearne entered Trinity College, Dublin, on May 23rd, 1639, at the age of 14½, and was awarded a scholarship in 1641. In the following year he matriculated as a pensioner of Sidney Sussex College, Cambridge, and almost immediately afterwards obtained the B.A. degree of the University of Cambridge. In 1646 he received the M.A. degree, and studied medicine at Cambridge until 1649, when he joined Wadham

[1] Circular 538.
[2] Memo. 97/M.C.W. London: H.M. Stationery Office, Price 1d.

College, Oxford, being appointed Savilian professor of astronomy in that University. In 1652 he was elected a Senior Fellow of Trinity College, Dublin, at the age of 28, and began medical practice in that city. In 1657 he was appointed professor of medicine. The College of Physicians, with Dr. John Stearne as its President, was started in a building intended for a bridewell, or place of imprisonment, but never used for that purpose: the Royal Charter of the College was obtained from Charles II in 1667. Two years later Stearne died, and was buried under the old chapel in Trinity College. The large assembly at the anniversary celebrations included the Governor-General of the Free State, the President and Council of the Royal College of Surgeons, and the Provost of Trinity College. The ceremony was presided over by the President of the Royal College of Physicians, Sir William J. Thompson.

Medical Registration in the Irish Free State.

The statements at the General Medical Council in connexion with medical registration in the Irish Free State have been erroneously interpreted by a section of the Dublin daily press to the effect that every doctor who held a Free State degree would not, as heretofore, be entitled to practise in Great Britain. Mr. P. Milligan, T.D. for the National University and Minister for Industry and Commerce, who had charge of the bill which was passed some time ago by the Dail, has made the following statement in connexion with the subject:

"The Medical Bill was carried through the Dail and passed its second reading in the Senate. At that point it was held up, as it was clear that the corresponding British bill was not likely to be introduced before the autumn. Recent political changes on the other side have still further postponed certain conversations which were proceeding regarding both measures. The bill will undoubtedly be carried through, but the exact date of its passage it is difficult to forecast."

Local Government Bill, 1924.

The superannuation sections of the Free State Local Government Bill now going through its committee stages in the Dail affect medical officials in some important respects. As the result of representations made by the representatives of the medical profession in the Free State to the Minister of Local Government and Public Health, substantial concessions have been made, especially with regard to the rights of existing officers. Under the amended Section 36, if existing officers have ten years' service, and if they signify in writing to the local authority under which they are serving that for the purposes of superannuation they do not intend to avail themselves of the Local Government Act, 1924, they shall remain for pension purposes under Section 8 of the Local Government Act, 1919. The expression "case of dispute" in that section is to include a dispute as to the right to or amount of an allowance raised by an auditor of the Minister appointed to audit the accounts of the local authority granting the pension.

Sir James Craig, M.D. (T.D. for the University of Dublin), moved to substitute the word "shall" for "may" in Section 37, thus making it obligatory on local authorities to grant pensions, and compensation for loss of office, to (*a*) officers who had attained the age of 65 and had at least twenty years' service; (*b*) officers who became incapable of discharging the duties of their offices efficiently by reason of permanent infirmity or of old age and had not less than ten years' service upon resigning or otherwise ceasing to hold office. The amendment was defeated; the result is that existing officers with less than ten years' service, and future officers in the event of their being refused pensions by the local authorities, will have to depend on the right of appeal to the Minister provided under Section 37. The Minister accepted the motion to delete Section 41, which provided that in the event of the incapacity of any pensioned officer ceasing before such officer had attained the age of 65 years, the local body may cancel such allowance and require him to resume his office or any like office at a rate of salary and emoluments not less than the rate which he received before he ceased to hold such office.

Scotland.

Edinburgh Royal Infirmary: Improvements and Extensions.

At the sixth annual meeting of the League of Subscribers to the Royal Infirmary of Edinburgh, held on November 27th, Mr. Russell Paton, the organizing secretary, submitted a report on the results attending the collections from public works and business establishments in the city for the year to October 1st last. The fortnightly revenue from this source towards the support of the Royal Infirmary appeared to be now on a fairly stabilized basis. The returns for the year showed that £20,904 (an increase of £577 over the previous year) had been collected by the systematic periodical contributions of small sums from employees engaged in public works and business establishments, the staffs of public schools, Government offices, and similar institutions. The membership of subscribers to the league now stood at 73,300 persons for Greater Edinburgh and 23,200 for country districts, making a total membership of 96,500, an increase of 2,500 over the previous year. An account of the year's work of the Infirmary was given by Sheriff Crole, K.C., one of the managers, who said that workers' contributions altogether amounted to certainly not less than £40,000 per annum. During the past year the Infirmary had done an immense amount of work; 15,687 patients had been treated in the wards and nearly 50,000 in the out-patient department. The income from subscriptions had amounted, approximately, to £70,400, and the dividends from invested funds to £23,427. These figures showed an increase of £1,694 and £1,563 respectively. In all, the income for the year totalled nearly £108,000, which was actually a great increase for the present year. The total expenditure, however, had amounted to £127,500, that being an increase of £7,700, as compared with the previous year, and leaving a deficiency of £19,600. Fortunately, this had been more than covered by £78,900 received this year in legacies. Of the balance, £34,000 had been earmarked for permanent capital, and after deducting a fairly large sum for certain capital expenditure there remained a net free balance of £15,000. He was afraid that there were not many voluntary hospitals in the kingdom that could show the same result, and in his opinion this was a great triumph for the voluntary system. The list of patients awaiting admission averaged 1,811 last year. To do away with the congestion of the ear, nose, and throat department that department was being extended. The managers had resolved that the time had come to have a new *x*-ray department, and they had now prepared plans and had engaged an expert who would give his whole time as director of the department. This department would cost £52,000, and he believed it would be when completed the finest medical electrical department in Great Britain. It had been resolved in connexion with this department that in the afternoons, after the infirmary patients had received attention, any person recommended by a doctor could go there for examination or treatment, and, of course, those who were able would give a donation to the institution. Continuing, the speaker referred to the fact that the Rockefeller Trust had given to the University a sum of over £30,000 for a clinical laboratory on condition that it should be erected in the Infirmary grounds. The Infirmary managers had agreed to allow the laboratory to be erected in the Infirmary grounds on condition that it became the property of the Infirmary, for, naturally, they could not allow any other body to own property in their grounds. Speaking also of the Astley-Ainslie institution, he stated that the governors of this institution had bought two adjoining properties and a piece of ground, formerly a golf course, and on this they were now going to erect their main institution. When the work was completed he hoped they would be able to admit between 150 and 170 convalescent patients from the Infirmary.

At the Edinburgh Merchant Company's 243rd anniversary dinner in the Merchants' Hall, Edinburgh, on November 28th, the Master, Mr. Michael A. T. Thomson, announced that the Education Board of the Company had

resolved to give the managers of the Royal Infirmary an opportunity of acquiring the buildings and site of George Watson's College. There had been numerous conferences between the Board and the managers with a view to the Infirmary becoming owners of George Watson's College, which stands in immediate proximity to the Royal Infirmary grounds on the west. There had been many things to consider before arriving at this decision. On the one hand, the managers of the Infirmary had been anxious to acquire this College and had been supported by the whole community. On the other hand, the Merchant Company, who were the owners of the College and custodians of the historical and traditional associations of those who had been educated there, had to consider whether they could obtain a convenient site and where they were to get the money to provide for a new school building on this site. They did not intend to press the Infirmary in the matter of payment, and they intended to be guided by what they thought the Infirmary managers could contribute towards the total cost of building a new school and the acquisition of a fresh site, which would entail an expenditure far in excess of what could be expected from such an institution as the Infirmary. The balance required for the purpose would be extracted by fair means by the Company from its own exchequer or from the exchequers of others.

GLASGOW HOSPITAL SUNDAY FUND.

The report of the Glasgow Hospital Sunday Fund for 1923 has been issued, and the annual appeal on behalf of the three Glasgow infirmaries was made in the churches of the city on Sunday, November 30th. The number of churches contributing to this fund during the past year numbered 493 as against 466 in the previous year, and the average amount contributed per church was £18 11s. 6d. compared with £21 13s. 5d. in 1922. The total amount received for the year from churches and sabbath schools was over £10,117, showing a decrease of £1,036 as compared with 1922. Of the sum collected, £4,522 was allocated to the Royal Infirmary with 723 beds; £3,465 to the Western Infirmary with 554 beds; and £1,801 to the Victoria Infirmary with 288 beds. An appeal was made by the committee for greater support.

CENTRAL MIDWIVES BOARD.

At a special meeting of the Central Midwives Board for Scotland, held for the hearing of penal cases, Dr. James Haig Ferguson in the chair, a certified midwife appeared in answer to charges of being guilty of negligence, breaches of the rules, and for failing to send for medical assistance in a case of abortion. The Board found the charges to be proved, and as the offences could not be adequately dealt with by censure or caution, it was resolved, before proceeding to remove the name from the Midwives' Roll and to cancel her certificate, to postpone sentence in order to give her an opportunity of proving amendment, and to ask for a report from the local supervising authority at the end of three months, and also at the end of six months from this date, on her conduct and methods of practice, with special regard to the offences of which she had been convicted. If at the end of either of these periods an unfavourable report is received, her name will forthwith be removed from the roll and her certificate cancelled. At the same meeting the case of another midwife charged with various breaches of the rules was duly considered. The Board resolved that the midwife should be admonished, and that sentence should be postponed pending the receipt of a report from the local supervising authority on the conduct and methods of her practice during the next three months.

DR. H. FREIZE STEPHENS has written a pamphlet for the Central Association for Mental Welfare on the subject of the introduction of Girl Guide training into a certified institution for mental defectives to which he is senior assistant medical officer. A full account is given of the principles and practice involved, and the advantages of this training are clearly indicated, with special reference to the inculcation of personal responsibility and interest in the welfare of others—valuable points in the medico-sociological treatment of the mentally deficient.

Correspondence.

THE GENERAL PRACTITIONER AND THE MATERNITY SERVICE.

SIR,—In the last correspondence on an obstetric subject I intervened to protest against its degenerating into recriminations against the specialist. The final paragraph of that letter (December 15th, 1923) would appear to apply now, so I venture to quote it:

> "If this correspondence can pass from girding at teachers and specialists to some constructive proposals as to what can be done to forward this overdue betterment of our maternity statistics, it would be the best possible augury for the future."

To the best of my recollection that intervention was followed by the immediate cessation of the correspondence of a year ago. I naturally thought *post hoc ergo propter hoc*, and that my remarks had taken all the zest out of the discussion. I trust this letter will not have a like effect, for it is intended to stimulate discussion and keep it more on the lines of the leading article (November 15th, p. 911) from which it originated.

On this occasion it is a useless waste of ink to make a whipping boy of the specialists, for they have had nothing to do with the raising of the present storm, though many of your correspondents seem to see their hand in it. The storm (which has been gathering for some time) burst when the two reports from Government departments were published, and, to my mind, the chief question that this correspondence should endeavour to answer is: What move ought to be made by the general body of the profession in view of the publication of these reports and the administrative measures recommended in them?

I would first urge all those practising midwifery to study the original reports and not merely abstracts; only in that way can they discover where are weak spots and gaps in our defence against maternal mortality, and how it is proposed to strengthen and close them. I would also suggest that both reports be read, for each has a value of its own.

The English Report (No. 25 of the Ministry of Health) gives the statistics of maternal mortality in England and Wales, and their variations in the last twenty-five years, and compares them with those in other countries; it gives the relative maternal rate in different parts of the country, in big centres, rural and industrial areas, and finally discusses the causes of mortality and methods of prevention. The problem is surveyed with great ability by one with full access to all the available figures and information. Where the report fails to carry conviction is that it represents the work and views of a single individual, and is thus suspect of making out a case and selecting the most suitable material for the purpose. Your correspondent who says "there is more than a suspicion among general practitioners that they have been unjustly condemned for something which is not their fault" expresses the inherent weakness of a case presented in this way, however well intentioned and ably it may be done.

The Scottish Report, being that of a Departmental Committee that has heard the evidence of many witnesses, representing different sides, and examined the figures and other official records, carries more weight as being the verdict of a special jury. On the other hand, little or nothing of the evidence is given on which its conclusions are based, and therefore it is not so generally informative. Circular 517 is from the Ministry of Health to the clerks of local health authorities, calling attention to Report No. 25 and to measures to be adopted in accordance with its recommendations. It is useful as giving an idea of the directions in which the local authorities are being encouraged to proceed.[1]

The reading of the official papers will, I think, convince those correspondents who "cannot understand the present outcry," or think "the present controversy should not be taken too seriously," that they are merely putting their heads in the sand, and the procrastinator who would wait because "the dispute has not yet shown any promise of a practical outcome" that no time should be lost in con-

[1] All these official papers can be obtained from H.M. Stationery Office, Imperial House, Kingsway, W.C.2, or from any bookseller. The Reports cost 1s. each, and Circular 517 1d.

sidering fully all aspects of the problem. It would be a feeble policy to remain unheeding till new measures become operative, and complain only after the deed is done. The present agitation means that a diminution of the maternal mortality and disability in childbed is urgently called for. This diminution can only be secured by the combined effort of the general public, the medical profession (general practitioners, specialists, and administrative officers), and midwives and other workers in the maternity service.

This correspondence will be of value so far as it may help in arousing the main body of the profession to make its effort, and particularly in indicating how the wide experience of midwifery and the conditions under which it is practised that is distributed amongst the general practitioners throughout the country can be mobilized to assist in formulating a reasoned and constructive policy for the betterment of the maternity service. The matter is one of extreme difficulty and calls for much deliberation. Why not begin at once by making it a subject for discussion at all professional meetings where practitioners forgather? Is there any other way in which the combined and considered opinion of the general practitioner can be obtained?—I am, etc.,

London, W.1, Dec. 1st. JOHN S. FAIRBAIRN.

SIR,—The inquiry is launched. Before we get lost in prejudice and in partisanship, may I submit the following for consideration?

(1) The task to be undertaken: Prophylaxis and treatment.
(2) Prophylaxis demands investigation into etiology and pathogeny.
(3) Investigation demands co-operation.
(4) Co-operation demands a suitable mental attitude in those co-operating.

Where, then, shall we begin? The letter of Dr. Gordon Ward (November 22nd, p. 973) gives a clue. First, a preliminary investigation to secure (4) above; then an investigation, either by a Royal Commission (as suggested by Dr. Herbert Williamson), or a committee (as suggested by Dr. T. Watts Eden, November 15th, p. 901), to take evidence from the co-operators. These latter co-operators should include representatives of consulting obstetricians, general practitioners, bacteriologists, pathologists, midwives, public health medical officers—and mothers.

The preliminary investigation should be conducted by a medical committee with a chairman well versed in the principles of logic and sufficient of a mathematician to deal with the interpretation of statistics and their errors, an expert statistician being co-opted if need be. The preliminary investigation should be primarily concerned with the collection and marshalling of facts and the logical deductions to be made from them. Until this is done it cannot be expected that Dr. Gordon Ward (and many others who feel as he does) will be available as co-operators; and without them the evidence will be incomplete and the carrying out of the final recommendations will lack support.

The four headings of the problem, then, become unravelled thus:

(*a*) The preliminary investigation (3) will deal with etiology and pathogeny (2); it will have for its object—first, the removal of obstacles to co-operation (4), and, secondly, the drawing up of evidence to be presented to the Royal Commission or committee (3).

(*b*) Prophylaxis (1) will be undertaken on the lines recommended by the Royal Commission after hearing the evidence. It is inevitable that this must be delayed and that the question of notification (an administrative detail of the subject) must wait.

(*c*) Treatment (1) cannot wait. Happily this is far less controversial, and a committee should be appointed with the least possible delay to deal with interim measures for providing additional treatment, both domiciliary and institutional, for patients suffering from any illness or accident connected with pregnancy or labour (this obviously covers miscarriage and perineal laceration as well as dystocia and puerperal sepsis and fever) without reference to the attachment of blame to anyone concerned. (See also the letter of Dr. Cyril J. G. Exley, November 22nd, p. 973.)

Let us rather say that the maternity service inquiry has been launched than that the maternity service dispute is raging; it is more useful. It is the mother who matters. Obstetrics is an art, not a science, as Dr. William Gordon puts it so well in his letter.—I am, etc.,

Henleaze, Bristol, Nov. 24th. J. R. R. TRIST.

SIR,—I would suggest that this subject be discussed at a special meeting of each Division of the British Medical Association, the meetings to be arranged for January next; and that a shorthand report of each meeting be taken, and a typewritten copy be sent to a committee to be chosen and convened by the Association in London. If such a small committee went through the reports, and tabulated experience and suggestions, I believe that something of permanent value might result. Such a committee might, in the first place, suggest the points for discussion. It must be realized that while there is an increasing number of indifferent and inexperienced obstetricians, due to faulty medical education, yet there is in the country a very large number of very able and experienced accoucheurs. It is the opinions of the latter which will be so valuable.

During my thirty-five years of general practice I must have attended about 3,000 cases—chiefly in a Lancashire industrial area, but with about five years of country practice. I will tell how things strike me.

First, I believe that puerperal fever is wound infection by a special kind of streptococcus. The wound may be the smallest scratch or a severe laceration. The last case I came in contact with was in Cornwall in 1923.

The case (attended by my partner) was a simple, natural case in a multipara, the child being born immediately on his arrival, before any vaginal examination could be made. What annoyed him was that there was a good deal of faecal mess, owing to an enema having been administered too late in labour. On the fourth or fifth day febrile symptoms began, lochia and milk stopped, and headache, abdominal distension, etc., appeared. Later on, about the fourteenth day, she had some thrombosis in the left femoral vein and a slight pulmonary embolism, causing pleurisy and pneumonia. She made a slow but complete recovery. I carefully examined the case per vaginam when the fever started, and I could find no signs of laceration, nor anything abnormal save subinvolution. What did come out on careful examination was that the nurse had come straight from another "bad case."

I remember about twenty-five years ago having a succession of six cases of puerperal fever, and although I took the most careful antiseptic precautions nothing would stop the epidemic but going away for a month's holiday. None of the six cases died, but I had an awful time of it with blunt curetting and intrauterine douching—the practice at that particular time. I remember once having a case in a primipara, and not being able to discover the cause of the infection until I found out that the handywoman was dressing at the same time an erysipelatous leg; there was in this case a rupture of the cervix. The traumatic cases are different, so long as the infective agent can be excluded.

Then I believe I have seen cases where septic peritonitis has been set up by the bursting of a chronic abscess outside but in the neighbourhood of the uterus. Again, I believe more attention should be paid to keeping clean the nails and fingers of the patient, and to her position after labour for drainage. I believe that generally the general practitioner is responsible for the lacerations and the nurse for the infection. Still, I think that if the C.M.B. nurse has to be so careful to maintain asepsis, a doctor who does not do the right thing as regards his hands and instruments ought to be reported.

Why I dislike the maternity service idea is that it means the lowering of the status of the general practitioner and his exclusion from another branch of medical practice. If the present tendency goes on what on earth will be left for him to do? One thing ought to be effected at once in fairness to the C.M.B. nurses. The untrained midwife, posing as a simple midwifery nurse, and covered by a registered medical practitioner, should be eliminated. There ought to be maternity homes to which the general practitioner could send suitable cases, and where he could attend them himself, with the help of proper nursing and the co-operation of his fellow practitioners as anaesthetists, etc. Then, what is the good of an ante-natal clinic unless the examiner communicates with the general practitioner who is engaged to attend the case? Personally, I now make a point of ante-natal "clinicking" every patient who engages my services.—I am, etc.,

Southend-on-Sea, Dec. 1st. FERDINAND REES, M.D.

SIR,—Much attention is now paid to ante-natal care, and to attendance at labour, in the hope of improving our mortality and morbidity results, both as regards mother and infant. But even those of us who pay a good deal of attention to ante-natal work, and are patient during attendance at labour, have a proportion of forceps deliveries and of stillbirths—for no apparent reason: we could not forecast such a probability, and had even forecast otherwise.

When we look for the source of trouble in these normal cases, needing forceps deliveries with or without stillbirths, we can, I think, as a rule, blame the inefficiency of the pains. And we none of us know the cause of efficiency or inefficiency of labour pains—the greater the inefficiency very often the severer and the more exhausting the pain.

We have yet to learn the factors affecting the work-producing character of labour pains. Possibly it depends on some vitamin, some zymine, or some endocrine, or on the chemical balance of the constitution of the blood; perhaps all these are related. We know, for example, the effect of Ringer's fluid on heart contractions, and we know the effect of pituitary extract on uterine contractions —both suggestive indeed.

McCollum in his dietetic work has proved the effect of vitamins on fertility, viability of young, power of suckling, and vitality and duration of life in rats and cattle. He does not mention the character of labour. Is it not possible that research devoted specifically to the efficiency of the uterine contraction in labour would teach us a great deal?

My own belief is that just as a normal menstruation is painless and easy, so should a labour be painless if we knew enough of all the factors concerned to be able to supply or prevent the deficiency or toxicity concerned. Most doctors see some very easy labours, and I have seen two patients, one of whom said she had no pain, and one of whom had one pain—both had babies born before arrival in hospital. Such instances are enough to prove the possibility of painless, or at all events easy, labour; and it is up to us to try and make labour universally so easy as to remove the dread of motherhood, and to reduce the need for examination and manipulation during labour to a minimum.

Money and care spent on such research would probably repay itself a hundredfold—nay, a thousandfold—and benefit more than half the race. I believe that a perfect civilization will produce a comfortable pregnancy and a short and easy labour, with healthy mother and child, and that a physiological research into the factors affecting the characters and efficiency of uterine contractions in labour is of greatest moment to-day, if only as a guide to our ante-natal and labour work.—I am, etc.,

MARY C. DEGARIS, M.D., B.S.Melb.

Geelong, Victoria, Australia, Sept. 24th.

SIR,—May I be permitted, on behalf of the oldest maternity hospital (training nearly one hundred pupil midwives and affording midwifery facilities to fifty-two medical students annually), to reply to Dr. Dorothy Douglas's letter in your issue of November 29th (p. 1024)?

It is *not* the prevailing idea at the City of London Maternity Hospital that the training of the medical student is secondary to that of the midwife. On the contrary, it has for a long time been recognized that considerable improvement in the training of students is needed; but under present conditions we are helpless to alter matters. The difficulty in the way is "finance." Remove this difficulty and we will undertake to provide adequate training for medical students.

To enable more students to be taken we should have to increase our accommodation (which is at present sufficient for two students only). It would not help matters to reduce the number of pupil midwives, because (as ward work is an important part of their practical training) their places would have to be filled by staff nurses.

So far as the City of London Maternity Hospital is concerned, the practical method of dealing with the problem would be to rebuild our Nurses' Home, for which anything from £20,000 to £40,000 would be required. If someone will cover the cost we will "deliver the goods."—I am, etc.,

RALPH B. CANNINGS,
Secretary.

City of London Maternity Hospital,
City Road, E.C.1, Nov. 29th.

PUERPERAL SEPSIS.

SIR,—That the question of puerperal sepsis is an important one no one will deny, nor will many be found who are satisfied with the position as it stands, and who do not hope and believe that the incidence of this disaster can be lessened. Yet there is a danger of a great deal of time and energy being expended in an acrimonious correspondence between the specialists and the general practitioners. Personally, I do not think that all the specialists attribute all puerperal sepsis to malpraxis on the part of general practitioners and midwives, nor that the terrible instances related in Dr. Janet Campbell's report fix the average level of skill of the general practitioners of this country. These matters should be capable of amicable settlement. Meanwhile it behoves us to think what immediate steps can be taken to ensure better results.

In the first place it seems to me that investigation is required into the condition of the genital canal in pregnant women. Is this, even in the absence of gross discharges, invariably sterile at the time of labour, and if not, in what proportion of cases is it not so? Is the parturient woman's resistance to organisms less than normal? Why are cases in which ante-partum haemorrhage has occurred so liable to sepsis? Further, if the resistance of a woman about to be confined is suspected to be lowered, in what way can it be raised? It seems to me that a research along these lines could not fail to yield important and instructive results. Obviously, the less manual or instrumental interference there is during labour the less likely is septic trouble to follow it. With strict ante-natal attention and a careful consideration of previous history this should be reduced to a minimum, so that it is reasonable to hope that, for instance, the high forceps operation will in course of time become a rarity.

Given that all appropriate ante-natal steps have been taken and that a patient is in labour, what steps can be taken to ensure a happy conclusion with no after trouble? Here a reference to "impatient midwifery" is necessary. The practitioner attending a woman in her own home is in a trying position in which it is difficult to adopt an attitude of masterly inactivity. He is assailed by anxious relatives who demand that he shall step in and terminate the labour, and he knows that if anything goes wrong it will be ascribed to his neglect to do something. It is too much to expect the average lay mind to be open to the argument that even if he had terminated the labour earlier he might have inflicted grievous harm on mother or child, or both, and things would in that case have been worse. I repeat that he is in a difficult position, but no man who has not the moral courage to uphold his convictions should undertake these cases, or, alternatively, if in doubt he should call in a second opinion.

It is perhaps unfortunate that the coal tar group of antiseptics, so useful as lubricants, are so popular among midwives. I have noticed time and again that these are not used in the correct strength—usually far too weak. It would seem that the pungent odour of the disinfectants gives a false sense of security. With the mercurial antiseptics, on the other hand, which are in tablet form, a much more accurate dosage can be obtained. Next, as one in the active practice of major surgery, I have always had a rooted objection to the unshaven perineum. That a surgeon should operate through a hair-covered area is indefensible. In these days of cheap safety razors it would be a small matter for the health authorities to issue them to midwives with instructions to shave at least the labia in all cases before making an examination.

The question of swabs, towels, and dressings is one of great importance. The use of old linen, hastily torn off and dabbed through a too weak antiseptic by the midwife, should be forbidden. It is too much to demand that the general practitioner shall provide a sterile outfit in all cases, for if reduced to its essentials his payment for the

actual confinement in such a case in a working-class house is somewhere in the neighbourhood of 7s. 6d. Nor can the patient herself afford to provide what is necessary. It would again be a small matter for the health authorities to issue to midwives and practitioners sterile packages. If these contained only a pound of sterile wool, some large squares of lint to serve as towels, umbilical pads and some perineal dressing for after use, it would be a great gain, and the cost would not be considerable.

Finally, if puerperal sepsis does occur surely the day is over for its inactive treatment by quinine, etc., in cottage homes. Beds should be provided in the municipal isolation hospital, where modern methods of treatment can be efficiently carried out.—I am, etc.,

JOHN C. JEFFERSON, F.R.C.S.,
Rochdale, Nov. 24th. Honorary Surgeon, Rochdale Infirmary.

SIR,—I have been much interested in the correspondence on this subject in your columns during the past few weeks, and especially in the suggestion by Leonard G. J. Mackey (November 22nd, p. 974) regarding the use of a prophylactic vaccine. About a year and a half ago I began, in collaboration with Dr. W. R. Logan, an intensive investigation into the bacteriology of the "normal" vaginal tract during pregnancy, and that investigation is still being carried on.

Up till now the results seem to lend support to the view, voiced by some of your correspondents in general practice, that the medical attendant or midwife may not be always solely to blame for the occurrence of puerperal sepsis. Further, and largely on account of the bacteriological findings, we have introduced a vaccine which, with the cordial approval of my colleagues on the staff of the Edinburgh Royal Maternity Hospital, is administered to every patient who attends the ante-natal department and who is to be confined in the hospital, provided she comes under observation at least a month before the expected date of delivery. This prophylactic vaccine has been in use during the last nine months, and so far the results seem to justify the hope that when a more nearly perfect vaccine is obtained we shall be in possession of a method which, in conjunction with adequate ante-natal supervision and strict surgical asepsis, will do much to remove from the practice of obstetrics, even by experts, the reproach of a stationary morbidity and mortality rate from sepsis in the puerperium.

In order to assist us in the preparation of a "universal" vaccine, would any who have the opportunity of obtaining cultures from cases of puerperal sepsis be so good as to forward them to us in order that they may be used in our new batch of vaccine now in course of preparation? We are considerably handicapped by the present complete absence (due, we believe, in part to the use of our vaccine) of even mild cases of sepsis from the wards of the Edinburgh Royal Maternity Hospital. Any cultures sent to Dr. W. R. Logan, clinical pathologist, Pathological Department, Royal Infirmary, Edinburgh, will be gratefully received and duly acknowledged.—I am, etc.,

Edinburgh, Nov. 29th. F. J. BROWNE.

SIR,—As my past experience includes personal attendance on almost a thousand maternity cases in private practice, and also special opportunities for dealing with some of the scientific questions involved, I venture to state my views as briefly as may be.

In 1910 I pointed out[1] the association of slight fever and *B. coli* infection of the bladder during the puerperium. The liability to this infection during pregnancy is now well known and does not require further emphasis. What is not so well known, perhaps, is that a *B. coli* infection during the pueperium may cause alarming symptoms indistinguishable clinically from streptococcal septicaemia, for some days at any rate.

The problem which faces the medical attendant in the first few days of the puerperium is this: Does the high fever from which the patient is suffering mean that she is almost certain to die, or is it almost certain that she will recover? My experience is that this question can be answered correctly inside twenty-four hours in the vast majority of cases. What is required is (1) a catheter specimen of the urine, (2) a swab from the uterus, (3) 10 c.cm. of blood from a vein in the patient's arm. If the urine shows *B. coli* and no streptococci or diplococci; if the swab shows no streptococci or other Gram-positive cocci; if the blood on culture is sterile, the patient will recover. If the blood on culture shows streptococci or diplococci the patient will die. On the other hand, if the uterine swab shows streptococci and the blood culture is negative a high leucocyte count is in favour of recovery; if the leucocyte count is subnormal, normal, or only very slightly increased, the temperature and pulse rate continuing high, a septicaemia will be demonstrated by subsequent blood culture and the patient will die. An investigation of this kind, when its results are carefully correlated with the clinical evidence, dispenses at once with a "guarded" prognosis in nine cases out of ten, and is very helpful. Of course, I do not lay down these rules as absolute; they are based, however, on personal experience.

But recent work has rendered an exact diagnosis important also for treatment. I may say at once that none of my patients whose blood on culture yielded a growth of streptococci or diplococci recovered. Vaccines (stock and autogenous) were employed without appreciable benefit in any case. My conclusion is that vaccines employed in the usual way for direct inoculation are of little or no value in this, the really serious, type of case. But the new method of immunizing a suitable donor and subsequently treating the patient by "immuno-transfusion" seems to me of quite extraordinary interest in this connexion. Judging by the results already achieved in other septicaemic conditions by this method it may be possible for us now to do something of decisive value in some of these almost uniformly fatal puerperal cases. If so, another scientific triumph of the first order will be registered in the brilliant record of St. Mary's.

With regard to the causes, immediate and predisposing, of puerperal fever, the suggestion that pregnant women may be carriers of, and liable to, infection by a streptococcus *sui generis* is new to me. It is certainly interesting, and might repay more thorough investigation. I may mention, however, the fact that I have on two occasions isolated a diplococcus which appeared to be Fraenkel's pneumococcus from the blood of rapidly fatal puerperal cases. The first was seen in consultation with the late Dr. Arthur Helme and Dr. Cruickshank, the other with Dr. F. F. Kerr. In one of these cases there were no pulmonary symptoms; in the other these developed only a short time before the patient died.

All the facts taken together seem to discredit the tendency, manifest in some quarters, to saddle the medical attendant with responsibility for these infections in all cases. I think this is not merely unjust—it is unscientific. The war, however, emphasized afresh the fact that devitalized, or partially devitalized, tissue provides a favourable medium for microbic development; and my impression is that premature and improper instrumental delivery, and premature expulsion of the placenta, are rightly regarded as important predisposing causes of these tragic infections.—I am, etc.,

Manchester, Nov. 29th. J. STAVELY DICK.

[1] BRITISH MEDICAL JOURNAL, October 29th, 1910.

EXPERIMENTAL CANCER IN THE GALL BLADDER OF GUINEA-PIGS.

SIR,—I have been late in seeing Dr. Leitch's important paper on this subject (September 13th, p. 451), but, late as I am, I beg leave to make some comments on it.

1. The freedom of the guinea-pig from spontaneous epithelial new growth, though remarkable, is not absolute. In the Proceedings of the German Pathological Society at Kassel in 1903 (Jena, 1904) there is a paper by Sternberg on two such cases in chronically inflamed lungs. In the discussion v. Hansemann adduced a similar pulmonary case, which he had chanced to examine with the microscope; and Schmorl gave two cases in the rabbit—the one gastric, the other pulmonary. From which it may be concluded that the condition would be found more often if looked for.

2. In these cases, as in Leitch's, mazes of epithelial-lined

tubes were found in the midst of fibrous callosities. Sternberg took them to be extensions of the bronchial tubes detached as white nodules, the size of peas, with thick convoluted walls; "adenoma destruens" was v. Hansemann's term. The epithelial cells were mostly long cylinders with presumably small nuclei, as in Leitch's gall-bladder cases.

3. Without questioning their invasive property, it is clear that tracts of fibrous callosity preceded the epithelial formations; which comes under Cornil's principle, that new-formed vascular tissue is always the antecedent of invasive malignancy, and is practically the same as Virchow's original contention that the subepithelial vascular stratum is the proper seat of cancer. In my view the epitheliated spaces are in the place of the new-formed blood channels themselves, of which I have given a proof in Fig. 86 of my book *Some Conclusions on Cancer* (London, 1920), drawn from the callous wall of a small hepatic abscess connecting with a cancer of the hepatic flexure of the colon.

4. The conclusion, I think, from Dr. Leitch's experiments on the gall bladder should be that the guinea-pig is peculiarly apt to develop these epitheliated tubes in the interstices of its chronic inflammatory reactions. To judge from the few details and the low power figures, they wanted the large nuclei and the deep chromatization of true cancer; and, until further advised, I should hold the result in the same ambiguity as Dr. Leitch holds the Japanese guinea-pig experiments.—I am, etc.,

Upper Boddington, Nov. 22nd. C. CREIGHTON, M.D.

TONSILLECTOMY.

SIR,—As a pupil of Mr. F. J. Steward, and as one of his successors in the department to which he refers, I write to say how glad I am to see him again bring his shrewd common sense into a discussion on a throat problem.

Some misunderstanding seems to have arisen over the wording "tonsillectomy by enucleation" in the first resolution carried at the Bradford meeting. Mr. Steward would appear to have read this as meaning "tonsillectomy by dissection," a meaning which I, personally, first read into it and which many persons, both general practitioners and surgeons, would believe that it meant. If the added words "by enucleation" do not refer to the method whereby the tonsillectomy is done, they are redundant and therefore unnecessary. That this meaning was not intended when the resolutions were passed is shown by the letter from Mr. T. B. Jobson (November 15th, p. 926). On further consideration one realizes that this must be so. A meeting which passed a resolution saying that tonsillectomy by dissection is the only efficient operation, etc., would not be one that in any way represented all laryngological thought in this country.

Mr. Jobson says that the matter is the old question of tonsillectomy *versus* tonsillotomy. I would say that the matter for discussion nowadays is not this; but is the question of the guillotine against dissection, or, as Mr. Steward puts it, the question of a major operation against a minor operation. Granted that there is a small number of tonsils which cannot be enucleated by the modern method of using the guillotine, yet this number is increasingly smaller the more this instrument is used, and in children is almost infinitesimal. When operating under best conditions with skilled assistants I have only had one case in the last two years, in a child, where dissection was necessary.

I venture to put forward the following principles in favour of the guillotine against dissection in these cases:

1. The guillotine will enucleate the tonsil as completely and far more cleanly than can be done by any method of dissection.
2. The risk to the patient, both from the anaesthetic and from haemorrhage, as well as from the possibility of septic after-complications through infection of the wound surface, is incomparably smaller.
3. The chances of scarring leading to deformity of the pharynx and the soft palate are considerably less.

Mr. Twistington Higgins (November 22nd, p. 975) says that "the aim of the operation should be to remove the tonsil, the whole tonsil, and nothing but the tonsil." With this I heartily agree; but I will not admit his inference that operation with the guillotine means that the whole tonsil is not removed, and I maintain that the removal of something more than the tonsil occurs far more frequently by dissection, even in the hands of skilled operators, than it does by enucleation with the guillotine in the hands of those equally skilled in this method.

In reference to Mr. Gerald Sichel's letter (November 15th, p. 926), I fear that the problem cannot be solved "by the invention of a properly designed guillotine." The number of guillotines which have been designed within the last twelve years is almost infinite. Arguments put forward by various users of the guillotine, each urging the advantages of his own favourite instrument, are as strenuous as they used to be in the discussion of tonsillectomy *versus* tonsillotomy and as they now should be in the mouths of those who wish to exterminate the false doctrine of those who say that every tonsil must be removed by dissection. Personally, I believe that the original guillotine of Morell Mackenzie is still the best. Modifications of the handle may be of use, but the modifications either in size or shape that have subsequently been put on the market have never approached in efficiency the ring and the knife in the original guillotine. It is a matter of personal comfort as to whether a grip handle is used or one which is pushed home with the thumb; but if the capsular surface of a tonsil which has been enucleated with a Mackenzie guillotine be compared with the corresponding surface of a tonsil which has been enucleated by means of one of those guillotines in which the blade is received on to a surface instead of a slit, it will always be found that the former has been more cleanly enucleated than the latter, which always tears away a slight excess of mucous membrane and usually also a small amount of muscle. The principle of enucleation by the guillotine is, however, one of method, whereby the tonsil is received into the ring, and is not one of detail of manufacture of the instrument.

I am willing to admit that there is a small number of cases in which I do not remove every little bit of tonsil, and I may then be said to fail in my ideal of performing a tonsillectomy; but I maintain that it is better for my patients that one should here and there retain a small mass of lymphoid tissue than that every patient should be subjected to an operation greater in degree, and more dangerous in nature, in order that I may boast of a hundred per cent. successes. Are those who write in the strain that Mr. Twistington Higgins and Mr. Cecil Joll have recently done in your columns prepared to say that not one of their seniors between the years 1880 and 1910 ever did any good by their operations on the tonsils? Yet it always seems to me that this is the logical conclusion to which one must come if one follows the arguments put forward by them and others of their way of thinking. In the great majority of cases the small piece left behind does not do any harm, at any rate in children. The reason why I set out to enucleate every tonsil is that I am unable to say, until long after the operation, which is the case in which a minute piece left behind does become harmful. While this warrants the enucleation of every tonsil by the simple method of the guillotine, it does not warrant the putting of every patient to the danger of dissection of his or her tonsils.—I am, etc.,

London, W.1, Nov. 29th. T. B. LAYTON.

SIR,—A great deal has been written in the columns of the JOURNAL recently about tonsillectomy and tonsillotomy, but so far as I am aware little has been said as to the functions of the tonsils. What these functions are does not appear to be fully decided, but theories are advanced as follows:

(1) That they are residual remains of the embryon and are useless.

(2) That they have a useful and particular secretion.

(3) That they exercise an action physically.

(4) That they secrete such mucus as will lubricate the pharyngeal mucous membrane, and so help deglutition.

(5) That they act as blood-forming glands.

If there is anything in these suggested functions—and who can deny that there may not be something in them?—then tonsillectomy as a routine practice must be wrong.

Custom may possibly explain why some surgeons advocate tonsillectomy as against tonsillotomy, just in the same way

as some thirty years ago turbinectomy became customary for nasal obstruction, and is not often practised to-day as a routine because as an outcome so many cases of dry rhinitis were produced some months afterwards on account of the removal of the warming and secreting properties of the turbinates. It is just possible the same effect may be produced by universal tonsillectomy, which appears now to be the custom as against tonsillotomy, and so dry pharyngitis and even (it may be) laryngitis may be produced. It would be interesting and instructive if statistics as to this, from those surgeons who advocate tonsillectomy so strongly, could be produced. In due course the suggested lubricating properties of the tonsils would be proved to be or not to be, and it would not be surprising in time to find the same objection raised as in the case of turbinectomy.—I am, etc.,

Chichester, Nov. 26th. ARTHUR M. BARFORD.

EPITHELIOMA OF THE SCROTUM IN COTTON-SPINNERS.

SIR,—With reference to Dr. Andrew Cochrane's letter on epithelioma of the scrotum in cotton-spinners, in your issue of November 1st (p. 835), the condition, apart from industrial workers and chimney-sweeps, must be rare. I have only seen one case—namely, in a business man of 45; duration fifteen months; clinically it was an irregular figure-of-eight shaped raised horny growth, about 5/8 in. by 1/2 in., on the right side of the scrotum. It felt like a thick coin through a cloth on pinching up between thumb and index. The lesion had been fomented and ointments applied, but the growth had slowly increased in size. There was no enlargement of inguinal glands. My clinical diagnosis was kerato-epithelioma. Microscopically it showed cancer cells of the squamous type arranged in masses penetrating the derm. Numerous horny cell nests were present. On looking up available literature down to 1920 no case of the kind was found.—I am, etc.,

London, W.1, Nov. 24th. GEORGE PERNET, M.D.

THE TREATMENT OF PLAGUE:

A Suggestion.

SIR,—In a recent address on the future of tropical medicine and hygiene which you were good enough to publish in an abridged form in the BRITISH MEDICAL JOURNAL of November 15th, I pointed out the urgent necessity at the present time of finding a remedy for plague.

Antiplague serum, commonly employed, is none too reliable. Occasionally it answers well, especially if given early in the disease, but not infrequently it fails. The various drugs which have been used often prove inert. The best of them would appear to be tincture of iodine and novarsenobillon administered intravenously. The latter appears to have given the most satisfactory results, but here again early administration is necessary if any tangible effect is to be obtained.

Accordingly I wish to recommend a trial of "mercurochrome 220 soluble," in view of the fact that it has been given with very considerable success in such diseases as enteric fever and puerperal fever. In both a bacteriaemia is present, as in plague. Again, its intravenous administration has been followed by gratifying results in one case of Rocky Mountain spotted fever, as recorded by Greeley. Rocky Mountain spotted fever, whatever its cause, is a disease resembling typhus fever in its clinical symptoms, and typhus and plague possess many features in common. Indeed, typhus fever is one of the diseases with which plague is often confused.

Hence there would appear to be some grounds for advocating the employment of mercurochrome in plague, especially at the present time, when the malady is present in Nigeria and the Gold Coast Colony, is causing grave anxiety in parts of the Union of South Africa, and is to a large extent defying the physician.

It is true that occasionally mercurochrome, when given intravenously, causes rather a severe reaction; but as a rule the reaction is moderate and the drug can be administered with safety. Any risk of ptyalism can be combated by a mouth-wash of turpentine used alternately with hydrogen peroxide, as pointed out by Bond and Barrier.

As regards dosage, Young and Hill state that, for intravenous use in puerperal sepsis and acute gonorrhoea, a 1 per cent. solution in water may be employed and from 2 to 5 mg. per kilo of body weight administered. In Rocky Mountain spotted fever Greeley gave doses of 20 c.cm. of a 1 per cent. solution, while in typhoid fever Bond and Barrier found 15 c.cm. per 100 lb. of body weight to be an average effective dose. In plague it would probably be advisable to begin with 20 c.cm., and to push the dosage, especially in severe cases.

For those resident abroad who may not have ready access to the literature I may say that mercurochrome 220 soluble is dibromo-oxy-mercury-fluorescein or its sodium salt. The latter has the formula $C_{20}H_7O_5Br_2HgOHNa_2$. It is a powder in the form of iridescent green scales, and is readily soluble in water.—I am, etc.,

ANDREW BALFOUR.

London School of Hygiene and Tropical Medicine, Dec. 1st.

EARLIER OPERATIVE TREATMENT OF ACUTE OTITIS MEDIA.

SIR,—The plea put forward by Mr. F. Holt Diggle as described in your issue of November 22nd (p. 940) merits, in my opinion, the serious consideration of all otologists as well as general practitioners. Earlier operative treatment of acute otitis media has indeed proved essential. Too often in the clinics of hospitals one has seen the distressing results of neglect of such treatment. On the other hand, a timely incision of the drumhead, or—when drainage via the meatus is inadequate owing to thickness of pus, adhesions, or oedema—opening of the mastoid antrum without interference with the soft tissues of the external auditory canal, will, in the vast majority of cases, bring about a rapid and complete cure without impairment of hearing. The time for the mastoid operation must be carefully chosen—as soon, in fact, as it is judged that free drainage has not and cannot be established via the meatus, and this is evidenced by the amount of oedema of the drumhead itself and the adjacent walls of the meatus.

I cannot, however, say that I am altogether in agreement with the method advocated of suturing completely the mastoid wound after "bipping" the cavity. A small gauze wick or tube drainage for a few days is, I think, safer and more advisable, and does not prolong the healing process to any appreciable degree.—I am, etc.,

London, W.1, Nov. 24th. L. G. BROWN, M.D., F.R.C.S.

SIR,—Perhaps Mr. Diggle will forgive me for saying that I can find no reference in his useful paper to the manifest duty of the aural surgeon to make a post-nasal examination and remove adenoids; followed by the deep drying out treatment of the ear, resort to opening the mastoid in young persons in the absence of indications other than discharge possibly will not be required. In cases with persistence of acute symptoms the two operations should be combined.—I am, etc.,

Birmingham, Nov. 25th. WILFRID GLEGG.

ACCLIMATIZATION TO HIGH ALTITUDES.

SIR,—With reference to Dr. J. S. Haldane's lecture on acclimatization to high altitudes (BRITISH MEDICAL JOURNAL, November 15th, p. 885), my experience may be of interest. I ascended Mont Blanc last August, accompanied by a friend. When leaving Chamonix at 7 a.m. we counted our pulses; they were 70 and 74 per minute respectively. The rapidity of the pulse rate gradually increased as we ascended, to 122 and 126 per minute respectively at the height of 12,000 feet (Aiguille du Goutter). At this altitude we rested in a recumbent position in a hut for six hours. Sleep was out of the question: the very rapid pulsation and breathing made sleep impossible either for ourselves or the guides. On resuming the climb at 2 a.m. the pulse rate was still between 120 and 125, and the

breathing was very fast. We continued almost without interruption until we reached the summit at 9 a.m.—15,800 feet. At this spot our pulses were slightly over 125 per minute. The return journey took about ten hours, and Chamonix was reached at 7 p.m. The rate of my pulse remained in the neighbourhood of 120 per minute for the next thirty-six hours, and returned to its normal only very gradually. I should like to add (1) that very little cyanosis was present during the ascent or descent; (2) that two guinea-pigs we took with us died at the altitude of 13,800 feet.

Discussing how acclimatization takes place, Dr. Haldane says that there is a thin layer of living protoplasm in the alveoli which is "actively driving oxygen inwards into the blood." In this connexion I would like to mention the fact that before my ascent I was subject to slight emphysema, and that since all the symptoms have disappeared. Has "the activity of the thin layer of living protoplasm" anything to do with it?—I am, etc.,

ARTHUR A. MILLER,
M.R.C.S., L.R.C.P.

London, N.4, Nov. 18th.

MILK AND ARTERIO-SCLEROSIS.

SIR,—Though much has been written about arterio-sclerosis our knowledge of its causation is very little. A favourite theory with many is that it is due to "absorption of some deleterious matter from the intestinal tract," but the composition of the poison is unknown. It is essentially a disease of adult life: seldom, if ever, found before full growth is attained and ossification of the bones complete. This points to some cause which comes into force after adult life commences. Seeing that an unhealthy digestive system may exist during any period of life, we must look elsewhere for a solution to the problem. Such being the case, I would crave space for the suggestion that the cause of arterio-sclerosis may be excessive use of milk after growth is more or less complete.

In a natural state very few animals have any milk after the first year of life or after one-half to three-quarters growth. Evidently Nature, though providing it freely for the very young, has not intended that it should be used by even the half-grown, let alone the fully grown and the aged. She stops the supply. But we in our *wisdom* continue to use it freely, in opposition to her scheme of life, and she is certain to inflict a penalty.

Milk, as we all know, contains relatively an enormous percentage of calcium. This is, without doubt, specially provided to enable ossification to be effected. When the bones are well formed and ossification nearly complete Nature absolutely stops the normal supply of milk, and with it the very free supply of calcium. We continue the supply of milk, obtained from extraneous sources, with its now excessive supply of calcium, not merely until full growth is attained, but, with the majority of us, during the whole of life. However we may close our eyes to facts and imagine ourselves cleverer than Nature, she will not brook the flouting of her laws, and will call upon us to pay the penalty for doing so. With milk, cheese must be included, as it consists entirely of solids derived from milk. The calcium in milk, and most probably in cheese, is in a form ready to be assimilated by the tissues needing it. Not being required to form bone (in adult life) it is free to be assimilated by, or deposited in, any other tissue with which it can blend, and we know it does so at times in the coats of the arteries.

I fully realize that my suggestion, if well founded, is a very serious blow to the continued free use of milk, but this cannot be avoided. When investigating the cause or progress of any disease we must not allow our habits or previous ideas to prevent the full, unbiased, and careful examination of any new theory. At one time phthisis was looked upon as being almost entirely hereditary, and alcohol as one of our most valuable foods. We all know how these ideas have been changed.

I feel I ought to give an explanation or an apology for asking you, Sir, to publish a theory which has not yet been put to any test. It is as follows. To a thoughtful man (generic term) an idea occurs which gives a feasible reason for a certain phenomenon, but, having no facilities for testing his idea, he does nothing and allows it to pass away. This to my mind is wrong. It may mean a very long delay in discovering the truth. He should, I suggest, discuss his idea with one or more persons who can appreciate it, as I have done, and, if it be (on the whole) well received, make it public, as I am doing, and thus give someone who has the means of putting it to a test an opportunity of doing so. This seems to me to be one form of team work.

I put forward the idea hoping that some member of our profession who is a practical chemist and has command of a laboratory (which I have not) will give it his attention. It ought not to be difficult to ascertain the presence or absence of calcium in the walls of the arteries, and if present the percentages at different ages. If present in the walls a very small increase might seriously damage their elasticity.

It is almost needless to say that I do not propound my idea as being the sole cause, but as being a very probable cause in many cases.—I am, etc.,

JAMES HOLMES, M.D.

Bury, Nov. 7th.

HYGIENE OF "BATH SALTS."

SIR,—There is a large and very profitable trade now done in "bath salts," whose use in the preparation of the ordinary warm bath is worth some advocacy. Whatever "bath salts" pretend to be upon the label of the bottle or tin that contains them, they usually consist of one essential ingredient—sodium monocarbonate. For the main part they consist of nothing else, excepting perfume, and certainly need to contain nothing else, their whole virtue lying in the softening of the water by the "soda" and the production of a decidedly alkaline water. The precipitation of the lime, in an ordinary water like that supplied to London, makes the water so much pleasanter for use in warm baths that one misses the effect badly after becoming accustomed to the use of "bath salts."

On being stirred into the water of the bath the sodium carbonate renders the water milky, but the precipitate formed in the bath is not detrimental in any way in taking the bath, and the presence of the precipitate is without effect in creating hardness, which is practically abolished by the mere fact of the lime being thrown out of solution, although present in a finely divided and suspended state. The sodium carbonate can be added to the water to excess without injury, and the slightest touch of soap then forms a profuse lather. But even without soap the effect of the alkaline water upon the skin is very cleansing and softening, the products of the sweat and sebaceous glands being easily removed without soap. The application of the water to the skin is more intimate, the hands slip easily over the wet skin, and massage of the limbs is assisted when there is a slight excess of sodium carbonate in the water.

The highly perfumed "bath salts" are expensive, but the scent has no claim to virtue, and the luxurious effects described can be economically obtained by a purchase of sodium carbonate, either in the form of ordinary crystalline "washing soda" or as dried sodium carbonate. The latter is advantageous as being in the form of powder, and as the water of crystallization represents nearly two-thirds of the weight of the crystalline carbonate it is best to use the dried product where storage is a consideration. Otherwise, at a trivial cost, the result desired can be got by a couple of handfuls of common "soda," of which a supply is kept for cleansing purposes in every house.

Taking the London water to have a hardness equal to 20 grains of carbonate of lime per gallon, a bath of water containing 30 gallons would require about 1½ oz. of dried sodium carbonate to precipitate all its lime; 2 oz. will give a pleasantly alkaline water, but if twice as much be used the dilution is still far too great for any unpleasant effects to result. About 4 oz. of the crystalline carbonate to 30 gallons produces the same effect. There is no necessity for exactitude greater than resulting from an eye estimate of the quantity of warm water in the bath and the weight of "soda" taken in the hand.—I am, etc.,

J. H. GARRETT, M.D.

Cheltenham, Nov. 27th.

GENERAL MEDICAL COUNCIL ELECTION.

SIR,—Will you allow us to express our united thanks to the registered medical practitioners—electors in England and Wales—who have given us so marked a proof of their confidence in the election just concluded?

We offer our assurance of continued endeavour as their direct representatives on the General Medical Council to look after their interests during the period of office which begins next year.—We are, etc.,

R. A. BOLAM.
H. B. BRACKENBURY.
J. A. MACDONALD.
T. JENNER VERRALL.

December 1st.

Obituary.

R. E. ROTH, C.M.G., D.S.O., M.R.C.S.,

Brigadier-General (ret.), Australian Commonwealth Military Forces.

OUR New South Wales correspondent writes:

News of the death of General Roth in New Guinea, on September 3rd, was received in Sydney with great regret. He was 65 years of age, and had spent the greater part of his life in Sydney. He was born in Brighton (England), and was educated at University College School and University College. He matriculated in the University of London in 1874, and took the diploma of M.R.C.S.Eng. in 1881.

General Roth was one of the founders of the New South Wales Centre of the St. John Ambulance Association and among the most able and successful of the first-aid instructors. He also took a prominent part in the establishment of the Red Cross Society in Sydney, and in the Royal Life Saving Society, for which he was awarded the Distinguished Service Medallion. In 1907 he visited Berlin as Commonwealth delegate to the International Congress of Hygiene, and was created a Knight of Grace of the Order of St. John of Jerusalem.

In 1899 he enlisted for service for the Boer war, and was officer commanding the No. 1 New South Wales Bearer Company. He was mentioned in dispatches and awarded the D.S.O. for services rendered in this campaign, and was promoted to the rank of brevet lieutenant-colonel. Returning to Sydney, he was appointed P.M.O. to No. 2 (N.S.W.) Military District, with the rank of colonel. In 1915 General Roth formed the 5th Field Ambulance and directed the training of the men while encamped at Waverley; he sailed with them for Gallipoli, landed with them, and remained on duty there until the evacuation. He did remarkable service until he was invalided home in November, 1916, being mentioned in dispatches and awarded the C.M.G. for his services.

News has been received by cable of the unexpected death at Imerimandroso, Madagascar, on November 1st, of Dr. C. F. ARROWSMITH MOSS. (Later information gives the cause of death as plague.) Dr. Moss graduated M.B. and C.M. at Edinburgh University in 1888 and M.D. in 1898. In 1889 he proceeded to Madagascar, where, under the joint auspices of the Friends' Foreign Missionary Association and the London Missionary Society, he laboured in the capital as a medical missionary until 1921. Since 1913 he had worked single-handed, carrying on extensive hospital duties and visitation amongst both the native and European population. In 1921 he proceeded to an outlying country district to open up medical work amongst the Sihanaka tribe. His duties there were very arduous, as facilities available in the capital were lacking: he had responsibility for the population of 175 villages; the sick might require to undertake a three weeks' journey from the more distant country to see him, while patients resident in the capital still not infrequently sought him out. In addition to these heavy demands of a pioneer medical field, he was responsible also for the difficult supervision of the building operations for a hospital and two dwelling-houses: a double task which apparently overtaxed his strength. He had finally surmounted difficulties, and late letters told of the opening of the hospital and of the first operation successfully performed. Allowed thus to complete the first stage of his labours, he was summoned hence. Dr. Moss was of the type of the unassuming faithful Christian gentleman, who without publicity gave loyal unstinted service, and has left a memory of unselfishness and simple piety. He is survived by a widow and four daughters: but his departure will be almost equally deplored by the Malagasy, to whose service he gave the best years of his life, and by his European colleagues, who valued so highly his professional help and his sympathetic friendship.—J. P.

Dr. JOHN FREDERICK FITZGERALD PARR of Brondesbury, who died on November 10th, aged 72, was a native of County Monaghan, and received his education at Queen's College, Belfast, and Charing Cross Hospital, London. He took the diploma of L.R.F.P.S.Glasg. in 1876 and that of L.S.A. in 1879. After practising in Sheffield for about twenty-five years he removed to Brondesbury, where he continued to practise up to the time of his death. For three years he served on the Willesden Board of Guardians, where his advice and experience were much valued. He was a member of the council of the Willesden Hospital, in which he took a keen interest, and assistant school medical officer to the Willesden Education Authority. In 1900 Dr. Parr received a commission in the old Tower Hamlets Volunteers, which were subsequently merged into the 4th Battalion London Regiment (T.F.), and retired with the rank of major. During the war he served in the R.A.M.C., and in September, 1914, went to Malta to take charge of a large hospital; he subsequently served at various Territorial depots in London. He was a member of the Willesden Division of the British Medical Association and a prominent Freemason. His son, Dr. Percy Parr, succeeds him in his practice.

The death occurred at Cambridge, on November 13th, of Dr. CRESSWELL BURROWS, at the age of 47. From Giggleswick School he went to Emmanuel College, Cambridge, where he took the degree of B.A. in 1896. He then studied medicine at St. Thomas's Hospital, where he secured a prize in surgery. He took the diplomas of M.R.C.S., L.R.C.P. in 1901, graduated M.B., B.Ch.Camb. in 1904, and proceeded M.D. in 1910. He had served as assistant medical officer to the Metropolitan Asylums Board, as resident assistant medical officer to the Willesden Isolation Hospital, and house-surgeon to the Royal Victoria Hospital, Dover; he subsequently became assistant medical officer in the Public Health Department of the London County Council. On the outbreak of the war he volunteered for active service and was gazetted as second lieutenant to the London Irish Rifles, but soon afterwards transferred to the field ambulance, with which, as captain, he saw active service on the Flanders front. In the winter of 1915-16 he was invalided home, and for a time was attached to the First Eastern General Hospital in Cambridge. On his return to Flanders he was second in command of No. 1 Stationary Hospital at Rouen, as a divisional officer with the rank of major. He retired from the service in 1919, and he resumed his work under the London County Council. He was taken ill during a holiday in August last and had to go into a nursing home. He recovered sufficiently to leave the home for a fortnight, but was compelled to return. Dr. Burrows, who was a member of the Hendon Division of the British Medical Association, was unmarried.

Dr. J. MEDWYN HUGHES died at his residence at Ruthin, after a lingering illness, on November 16th. Dr. Hughes was educated at Edinburgh, where he graduated M.B., C.M. in 1886. After graduation he devoted himself to general practice in Ruthin, and became one of the best known and most highly esteemed medical practitioners in North Wales. He held the post of senior surgeon to the Ruthin Union Hospital, and during the war was honorary medical officer of the British Red Cross Auxiliary Hospital in Ruthin. He was for some time medical officer of health for the Ruthin Rural District Council, and a member of the County Insurance Committee and the Panel Committee. He had been a member of the British Medical Association for many years, and was an ex-chairman of the Denbigh

and Flint Division. For a quarter of a century he was a magistrate for the county of Denbigh and for many years an alderman of the county council, his services on the Public Health Committee being of great value. He was elected Mayor of Ruthin in 1892, and held this office also from 1897 to 1901. His sympathetic personality and humorous outlook won numerous friends, while his energy, enthusiasm, and strong sense of public duty were an inspiration and incentive to many. A large assembly attended his funeral on November 19th, at the church of Llanrhydd, to pay a last tribute to one whose whole life was characterized by integrity of purpose and unfailing kindliness.

Dr. ROBERT H. HALL, who died at Leeds on November 6th, was the son of the late Dr. William Hall, the well known philanthropist, who took great interest in the welfare of poor children. He was educated at Cambridge University, Leeds, and St. Thomas's Hospital, and graduated M.A., M.B., B.Ch.Camb. in 1891. He succeeded his father in practice on the latter's retirement many years ago, and at the time of his death was the senior factory surgeon in Leeds; he was a member of the Leeds Division of the British Medical Association.

Dr. LEO STUCKEY, senior surgeon to the Alessandro Hospital, Leningrad, and author of several surgical works, has been assassinated by the brother of one of his patients, who died of uraemia four days after an operation.

Professor AUGUST RITTER VON REUSS, a well known ophthalmologist of Vienna, has died at the age of 83.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on November 27th the following medical degrees were conferred:

M.D.—W. H. Ogilvie.
M.B.—C. L. Elgood.

UNIVERSITY OF LONDON.

THE title of Professor of Anatomy in the University has been conferred on Mrs. Mary Frances Lucas Keene, M.B., B.S.Lond., in respect of her post as head of the Department of Anatomy at the London School of Medicine for Women. Professor Lucas Keene was appointed Lecturer in Anatomy and Embryology, with charge of the department, at the London School of Medicine for Women in 1919, and the title of Reader in Anatomy in the University was conferred on her in respect of this post in 1921. The chair of anatomy at this school is at present unendowed, but the Jubilee Endowment Fund will, it is hoped, eventually provide the money required for endowment. The fund at present amounts to £28,000, and the total sum required to endow the three chairs of anatomy, physiology, and pathology is estimated at £60,000.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—*†F. B. Byrom, *‖L. Dulake (University Medal), *†J. A. James, *†R. J. Toleman, *†Mary M. Turnbull, Katharine M. Andrew, Ruth M. Arkwright, N. Asherson, A. A. Battson, J. Bevan-Jones, Phyllis E. Bond, R. T. Brain, Violet W. Brown, F. A. Bryning, A. B. Cooper, E. R. Cullinan, W. A. Date, D. J. Davies, F. Davies, Iforwyn G. Davies, A. F. Doyle, E. F. Duck, Doris L. Durle, D. G. M. Edwards, J. E good, Phyllis V. L. Epps, S. Farquharson, V. F. Farr, Margery Freeborough, H. P. Goldsmith, J. A. E. M. Hadley, R. Hare, J. K. Hasler, Sybil M. Hawkes, K. W. Heritage, Elfrida L. G. Hill, Frances A. Hogben, Barbara M. Hope, Margaret Hossell, Audrey M. Hughes, C. Ivo, F. J. Jauch, A. E. Jenkins, Eva M. Johnson, A. T. Jones, D. J. Jones, J. W. Joule, Nancy R. Lewis, Kate Madders, H. J. Malkin, Doris I. Mart, Violet E. M. Mizen, P. McG. Moffatt, H. V. Morlock, A. D. Morris, H. Mould, A. L. te W. Naudé, F. G. Nicholas, Doris E. O'Doherty, P. H. O'Donovan, C. M. Pearce, J. P. Peel, A. T. W. Powell, C. S. C. Prance, Violet A. Quilley, W. A. Robb, Nina L. D. Robertson, M. Rockfelt, Winifred M. Sampson, Margaret B. Savory, G. D. Shaw, N. W. Snell, Dorothy M. Stewart, Grace M. L. Summerhayes, D. B. Sutton, Mary A. StC. Swann, H. C. C. Taylor, Portia K. Taylor, R. C. Taylor, Beatrice Teverson, D. J. Valentine, A. H. C. Visick, H. G. Wyatt.

* With honours. ‡ Distinction in pathology.
† Distinction in medicine. ‖ Distinction in surgery.

UNIVERSITY COLLEGE.

A course of three lectures on the anatomy and physiology of the sympathetic innervation of the striated muscle will be given by Professor John Irvine Hunter (University of Sydney) at University College, Gower Street, W.C.1, on December 8th, 10th, and 12th at 5 p.m. Professor G. Elliot Smith, F.R.S., will preside at the first lecture. Admission to the lectures is free.

Medical News.

THE first session of the new Parliament opened on Tuesday, December 2nd, when Mr. J. H. Whitley was again elected Speaker. The King's Speech will be delivered on the 9th, and after the Christmas adjournment the session will be resumed about February 10th. Before Christmas only the debate on the Address and urgent business will be taken. The new Minister of Health, Mr. Neville Chamberlain, is understood to be investigating the possibility of better co-ordination between public health services and health authorities. In view of the fact that the Royal Commission on National Health Insurance is not expected to complete its work for another year, there is no likelihood of the Government proposing during the session of 1925 any measure of "all-in national insurance."

THE annual dinner of the Old Epsomian Club will be held at the Trocadero Restaurant, Piccadilly Circus, on Thursday, December 11th, at 7.15 p.m. Mr. George E. Waugh, F.R.C.S., will be in the chair. The annual meeting will precede the dinner at the same place at 6.30. Members of the club intending to be present at the dinner are asked to notify Mr. R. M. Handfield-Jones, F.R.C.S., 53, Hamilton Terrace, St. John's Wood, N.W.8, as soon as possible, mentioning the names of those near whom they would like to sit. The price of the dinner is 8s. 6d. (exclusive of wine), and will be collected at the table.

THE annual general meeting of the British Dentists' Hospital will be held to-day (Saturday, December 6th), at 3.30 p.m., in the rooms of the British Dental Association, 23, Russell Square, W.C., with the President, Sir Harry Baldwin, C.V.O., in the chair.

IN the advertisement columns of this issue full details are published of the Harmsworth Memorial Research Fund for the investigation of malignant endocarditis, to which reference was made in our last issue (p. 1015).

THE Honorary Secretary of the Sir Malcolm Morris Memorial Fund informs us that the total now subscribed is £479 6s. 2d., and the committee earnestly hopes that this sum will be made up to £500 at an early date, as it has been decided to close the appeal at the end of December. Further subscriptions will be gratefully acknowledged if forwarded to the Honorary Treasurers, "Sir Malcolm Morris Memorial Fund," at 12, Stratford Place, London, W.1.

THE Home Secretary has made regulations, dated November 20th, (*a*) prohibiting, except under licence, the diversion of raw opium or dangerous drugs passing in transit through a port in the United Kingdom to a destination other than that to which they were authorized to be consigned from the country of export; and (*b*) modifying, in the case of prescriptions for dangerous drugs which are given on the official National Health Insurance form, the requirements to be observed before the prescription may be dispensed.

THE late Mr. John Hammond Morgan, F.R.C.S., has left estate of the gross value of £114,053 with net personalty £107,074. He has bequeathed £1,000 to Charing Cross Hospital, £250 to the Hospital for Sick Children, Great Ormond Street, £200 to the Royal Medical Benevolent Fund, and £100 to the Lord Mayor Treloar's Hospital at Alton.

DR. S. W. F. UNDERHILL, senior demonstrator of physiology at St. Bartholomew's Hospital, has accepted an appointment as research physiologist to the British Drug Houses, Ltd., and Messrs. Allen and Hanburys, Ltd., in connexion with the production of "A. B." brand insulin.

THE next Congress of the Royal Sanitary Institute and Health Exhibition will be held in Edinburgh from July 20th to 25th, 1925, by invitation of the magistrates and city council.

AN exhibition of hygiene will be held at Vienna in April and May, 1925.

THE thirty-fourth French Congress of Surgery will be held in Paris on October 5th, 1925, when the following subjects will be discussed: (1) Remote results of different methods of treatment of cancer of the rectum, introduced by MM. Schwartz and Gaudier. (2) Treatment of tuberculosis of the knee after adolescence, introduced by MM. Fredet and Vignard. (3) Indications for splenectomy and its results, introduced by MM. Cadenat and Guyot.

WILLIAM HEINEMANN (Medical Books), Ltd., announce for early publication *Acute Infectious Diseases*, a handbook for practitioners and students, by Dr. J. D. Rolleston, senior assistant medical officer, Grove Fever Hospital, London.

THE sixty-second annual meeting of the Royal Surgical Aid Society will be held at the Mansion House, London, on Tuesday, December 9th, at 4 p.m. The chair will be taken by the Lord Mayor, who will be supported by, among others, Sir George R. Turner, K.B.E., F.R.C.S., and Dr. Frederick W. Willway.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.* Authors desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—not necessarily for publication.

ALL communications with reference to advertisements as well as orders for copies of the JOURNAL should be addressed to the Financial Secretary and Business Manager, 429, Strand, London, W.C.2. Attention to this request will avoid delay. Communications with reference to editorial business should be addressed to the Editor, BRITISH MEDICAL JOURNAL, 429, Strand, W.C.2.

Communications intended for the current issue should be posted so as to arrive by the first post on Monday or at latest be received not later than Tuesday morning.

THE telephone number of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediaeera Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 4361, Central).

QUERIES AND ANSWERS.

AN EXPLOSION.

DR. SIDNEY CLARKE, Honorary Secretary of the Hertfordshire (Local) Medical and Panel Committees, tells us that the Herts *Formulary* contains the following recipe for a mixture:

Oxymel scillae	ℿ xxx
Pot. nit.	gr. v
Vin. ipecac.	ℿ xv
Tr. opii	ℿ iij
Aquam	ad ℥ ss

A bottle containing this mixture exploded, causing a small injury to an insured person. Dr. Clarke asks how the explosion is to be explained. Was there any interaction between the drugs? Or could the cause have been fermentation of the honey in the oxymel scillae? He adds that he is told that oxymel scillae, when in bulk, sometimes ferments.

*** The incident described by Dr. Clarke does not seem to admit of any very ready explanation. No chemical reaction is possible which could attain explosive violence. If the mixture is evaporated to dryness the residue would deflagrate on ignition, but the residue is somewhat hygroscopic. Even if the bottle leaked, it does not seem possible that any portion could have become dried up and ignited, with the result described. The only remaining hypothesis is that the bottle was burst by carbon dioxide generated through a fermentation of the honey in the oxymel of squill. But that suggestion must be dismissed, as potassium nitrate effectively prevents fermentation when present in the proportion stated. If potassium citrate had been present instead of potassium nitrate, fermentation would be a possible and likely cause of the event, since the mixture contains no other substance inhibitive to yeast action. Fermentative yeasts are abundant in atmospheric dust. They collect on saccharine materials and remain dormant in the absence of sufficient water for their development. They are not propagated in concentrated honey, but germinate when water is added to a favourable degree of dilution. Saccharine fermentation is comparatively rare in medicines. It frequently happens that one of the ingredients exerts an inhibitory action. The antiseptic property of sodium salicylate, the saline quality of potassium bromide, the acid character of tincture of ferric chloride, and the alcohol of other tinctures, counteract fermentation. The medicated waters of the *Pharmacopoeia* are notably efficient in preventing fermentation.

REFERRED SENSATION IN AMPUTATION STUMP.

"F. W. L." writes: A man who had an amputation through the lower third of the thigh in 1918 complains that since the operation he gets "pins and needles" whenever the weather turns cold and damp, the sensation being referred to the plantar surface of the foot. He is entirely free from discomfort in warm weather. He feels the cold very much in the stump, but warmth applied to it does not bring entire relief. Suggestions for alleviating his distress will be welcomed.

INCOME TAX.

General Expenses.

"M. H. (Kent)" has hitherto been allowed to deduct two-thirds of his rent, rates, lighting, and heating, the whole of his motoring expenses, and £60 for wages and board of one maid. The inspector of taxes now proposes to restrict these allowances in the case of the first two items to proportions of one-third and nine-tenths respectively, and in the case of the third to £50. Is this justified?

*** It is difficult to give definite advice on this question, since the answer to the question really depends on whether or not the reduced allowance is reasonable. In the normal case of a practice in a provincial town one-half is the proportion frequently taken for rent and rates, with a somewhat smaller proportion for lighting and heating. On the one hand, it has to be borne in mind that the professional portion of the premises is on the ground floor—that is, the most valuable floor; on the other hand, the amount allowed should not be so large as to leave the balance insufficient to represent properly the cost of the private portion. For instance, suppose the total cost for rent and rates is £150, then on the basis that our correspondent has hitherto enjoyed £50 only was the amount which represented the cost of his private accommodation, which may well be clearly inadequate. If he can obtain half rent and rates *plus* one-third lighting and heating he will probably be near enough, and we suggest that he might inform the inspector that he is prepared to take the matter to appeal on that basis. As regards the other two items, "M. H. (Kent)" can apply the reasonable test in his own mind. Whether he would succeed on appeal we cannot, of course, say, as so many small details are necessarily involved.

Replacement of Car.

"H. W. F." replaced his car in July, 1924. Does that affect his income tax liability for the financial year ending April 5th, 1925?

*** No. His liability is determined by the average profits of the three previous years—that is, the three years ended December 31st, 1923, for instance. The expense of replacing his car is deductable in arriving at the amount of the professional profits for 1924, and will affect the average for 1925–26 and the two following years.

Purchase of House.

"K. D. R." purchased a house for £600 and expended £150 on decorations and lighting. He uses two rooms for professional purposes and has bought furniture, etc., and had some alterations carried out to put them in a proper condition for professional use. What allowances can he claim?

*** He should ascertain—for example, from the local collector—the amount at which the premises are assessed to income tax Schedule A. In calculating the professional profits he can deduct a proportion—say one-half—of this sum, but *not* the amount of the mortgage interest, £17 10s. (He will have to pay tax on this latter sum, but can deduct the tax when paying interest to the mortgagee.) From the particulars given it would seem that the expenditure represents capital outlay, and as such is not deductable, with the exception of the expenditure on decorations, of which amount "K. D. R." can deduct the portion which would have been necessary to restore, but not to improve upon, the former standard of decoration.

Cash Basis.

"F. J. W." took over a practice in January, 1921, but did not take over book debts. His returns have been based on cash receipts calculated to December 31st in each year. The inspector of taxes claims to add to the cash profits of each of the first three years one-third of the excess of the value of outstanding debts due to "F. J. W." at April 5th, 1924, over the corresponding amount as at April 5th, 1921.

*** The inspector is not justified in selecting April 5th as the date for the calculation of the increase in book debts; if "F. J. W.'s" statements are made up as at December 31st, that is the date which should be taken, and quite unnecessary trouble is caused by the selection of any other date. But, apart from this, the inspector's contention is theoretically correct. Strictly, the proper basis of income tax returns is the amount of the debts booked—or rather their value—and the adjustment made to the cash receipt figures is necessary to bring them to the correct level. If this were not done the returns made would not fully reflect the value of the year's earnings. Of course, if "F. J. W." had taken over his predecessor's book debts and had brought the receipts therefrom into his accounts no such adjustment would have been necessary, and the same position will be reached as soon as the amount of outstanding debts reaches a normal standard for the practice. The expenditure incurred in altering and adapting the coach-house was of a "capital" nature and is not allowable for income tax purposes.

KELOID VACCINATION SCARS.

DR. J. CRISP (Market Harborough) writes: A healthy girl, aged 10, was vaccinated in three places on the upper arm in the usual manner. The vaccinia followed the usual course, except that the vesicles broke and needed dressing with boric powder and lint several times before they dried up. Some months later all the scars had become raised, thickened, smooth, and dusky red—in fact, "keloid"—a very unsightly condition for a girl's arm, and one which I have never seen previously in many years of experience of vaccinating. I should be very glad to have suggestions for treatment. Has carbon dioxide snow been used in a similar condition, and if so with what effect?

LETTERS, NOTES, ETC.

OWING to pressure of other matter we are compelled this week to hold over Reports of Medical Societies which have been prepared for publication.

A WARNING.

THE Chief Constable of Leeds has informed the Registrar of the General Medical Council that a man who gave the name of Mr. Ferguson, aged about 70, called on a doctor in that city and asked for financial assistance. He stated that he was a doctor and obtained his M.B., Ch.B.Edin. in 1894, and had practised in Harley Street and Henrietta Street, and also in Edinburgh, and at present he was residing at Bradford. He produced a letter purporting to be written by another doctor, who had apparently assisted him to the extent of 10s. The Registrar is unable to identify the name of this man Ferguson as ever having appeared upon the *Register*.

BELLOTT'S HOSPITAL, BATH.

MR. CHARLES CURD, M.R.C.S. (Bath), writes: May I make known to the medical practitioners of the United Kingdom the benefits to be obtained through Bellott's Hospital, which was founded in 1611 for the accommodation of ten poor persons seeking the benefits of the Bath waters, who receive the required baths and treatment with medical attendance gratuitously, a separate room, with an allowance of 2s. 4d. weekly with coals? It is suitable for those cases which do not need hospital treatment, but are able to get about and help themselves, and who are able to provide their own food, but cannot afford to pay even a moderate amount for a course of treatment. The hospital is in the care of a very capable matron, and the medical officer is appointed by the Municipal Charity Trustees, who control the establishment. Application for admission should be made to the town clerk, Bath.

PUERPERAL PYREXIA.

DR. N. WALMISLEY (Westminster) writes with reference to Dr. Claude Wilson's letter (November 22nd, p. 982): I have seen at least six cases like the one Dr. Wilson describes (temperature 105° F.). The first case I saw over thirty years ago, when assisting a doctor who had a large midwifery practice. That doctor did not consider it exceptional, judging by his remarks to me at the time. Since then I have seen several cases as a locumtenent in different parts of the country. All the patients had good appetites, and I remember well a confinement where I allowed the patient to eat what she liked, causing trouble between me and another doctor who had never seen a similar case. No drugs were given and the patients made uneventful recoveries.

HERPES AND VARICELLA.

DR. W. JAMES SUSMAN (Henley-on-Thames) writes: As there has has been a good deal of correspondence on this subject the following notes may be of interest. I have to-day seen a small boy, aged 4, with well marked herpes over his right cheek and numerous typical varicella spots all over his body—back and front. Some time ago I saw a mother who was nursing her infant, 4 months old. The mother had a severe attack of herpes frontalis; twelve days later the infant developed varicella.

ASSISTANTS IN GENERAL PRACTICE.

"G. G." writes: There is certainly a difference between the value of a newly qualified man and one of one or two years' experience in general practice, but I am convinced that the minimum value of an assistant is £350 per annum indoor. My opinion regarding the time taken by a newly qualified man to learn the routine work of a practice agrees with that expressed by "T. N." (November 29th, p. 1032). A new man gets into the swing of the work very quickly, and in a few weeks' time not only is he doing about half the work but he is discussing the diagnosis and treatment of many of the cases from a more advanced standpoint; and although he may be a young man the very presence of a "second opinion" in the practice goes a long way in the management of the doubting and "difficile" type of patient who means so much to the practitioner. But when we come to the assistant who has had two or more years in general practice the situation is quite different, and a salary of £350 indoor is not adequate payment for the services he renders in the general work, and more especially in midwifery, in which branch he is far ahead of the newly qualified man. He soon gathers a small clientèle of his own. It is well known that a good locumtenent makes one and a half to two times more than a moderate one. A good assistant will quickly make and exceed the extra £50 of his salary by the tactful handling of patients, and it is the doctor who pays the little extra who gets the best man.

"BARKING OF THE SKIN."

DR. R. C. MCGUIRE (Bishopton, Renfrewshire) writes: Having obtained uniformly good results from treating skin abrasions with silver nitrate I cordially recommend its adoption by others. The injured area is cleansed with a 1 in 20 carbolic lotion, and, with the surrounding skin, is thoroughly dried with sterile gauze. The abraded area is then painted with a 3 per cent. solution of silver nitrate applied by cotton-wool mounted on a probe. While the parts are still wet powdered starch is dusted thickly over them. This results in the formation of an aseptic film that acts as a protective for the injured surfaces and favours aseptic healing. The process can be repeated daily for three days if necessary, but as a rule one thorough application is sufficient. In about four days a well marked ring of hyperaemia surrounds the film on the wound; in about ten days the film detaches itself, its edges curling up, and leaving, when completely detached, a soundly healed pink scar. The treatment is simple, safe, almost painless, and very economical. It does away with the frequent dressing of a septic wound surface by moist antiseptic dressings. This latter treatment converts the wounds into open ulcers, which heal slowly by granulation. Barking of the skin is a very troublesome form of injury which frequently gives rise to severe septic inflammation, owing to the extensive damage to skin and blood vessels and the liability to infection. The treatment is based on the fact that the application of a 2 per cent. solution of silver nitrate will prevent gonococcal suppuration on such delicate epithelial surfaces as the conjunctiva. I believed that a slightly stronger solution—namely, 3 per cent.—would prevent suppuration in exposed epidermal tissues. The main point is to begin the treatment early, and to keep the parts dry after the first application of starch and silver.

PICRIC ACID FOR CATGUT.

MR. FREDERICK EDGE, F.R.C.S. (Birmingham), writes: In his letter about "Picric acid: its use and abuse," Dr. Ian Macdonald (November 15th, p. 926) refers to the method of preparing catgut with picric acid and oil of cloves. For years I used it with satisfaction and found the catgut strong and pliable, but this spring I had two cases of tetanus, one of whom died. I have therefore given up this method, as it is evident that tetanus bacilli or spores are not destroyed when present inside the gut.

CANCER IN AFRICAN NATIVES.

DR. J. G. MCNAUGHTON (Senior Medical Officer, Tabora Hospital, Tanganyika Territory) writes: In connexion with the correspondence in the JOURNAL recently about cancer in the natives of Africa, the following note may be of interest. During the past four weeks I have admitted to hospital one case of sarcoma in a woman of 18 on the left scapular region, and one case of epithelioma of the lip in a man of 40. Both tumours were examined microscopically after removal and the diagnosis confirmed.

PROPOSED MODIFICATION OF THE RECORD SYRINGE.

DR. JOHN WALKER (Paisley) writes: May I suggest the following useful addition to the Record syringe? In filling the syringe from an ampoule I have always found it advantageous to have both hands free for the syringe. When one has to hold both the syringe and the ampoule in the left hand accidental pressure against the bottom of the ampoule may blunt the point of the needle. I have obviated this by the attachment of a small clasp mechanism to the side of the steel bottom plate in the syringe case. The clasp consists of a tiny strip of metal soldered at right angles to the plate, with a clip fastened to its upper end. This clasp, so attached, does not interfere with the use of the other clips for the various parts of the syringe, nor with the closing of the case, the height of the strip being less than the depth of the case. Perhaps some instrument maker will adopt this suggestion. The metal strip might be cut out of the plate and turned up at right angles to form the attachment for the clip.

FIRST AID FOR THE MOTOR CAR.

MESSRS. STERNS, LTD., of Royal London House, Finsbury Square, E.C.2, makers of the motor lubricants sternol and ambroleum, have issued a waistcoat-pocket volume entitled *First Aid for the Car*, a copy of which they will supply free on application to their office. Information on various ailments of motor cars is given under three headings: symptoms, causes, and remedies. In addition, there are hints on driving, on the motor's little troubles, and on the motorist's own troubles. The last named consist of a very brief summary of first-aid treatment for sundry injuries and accidents. Some of the remedies suggested are not, perhaps, very suitable for application by the inexperienced. The booklet is of course frankly an advertisement for Messrs. Sterns's wares; but it should prove quite useful to those in difficulty with their cars, especially as the arrangement under the three headings makes reference to it very easy.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 61, 62, 63, 66, and 67 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 64 and 65.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 211.